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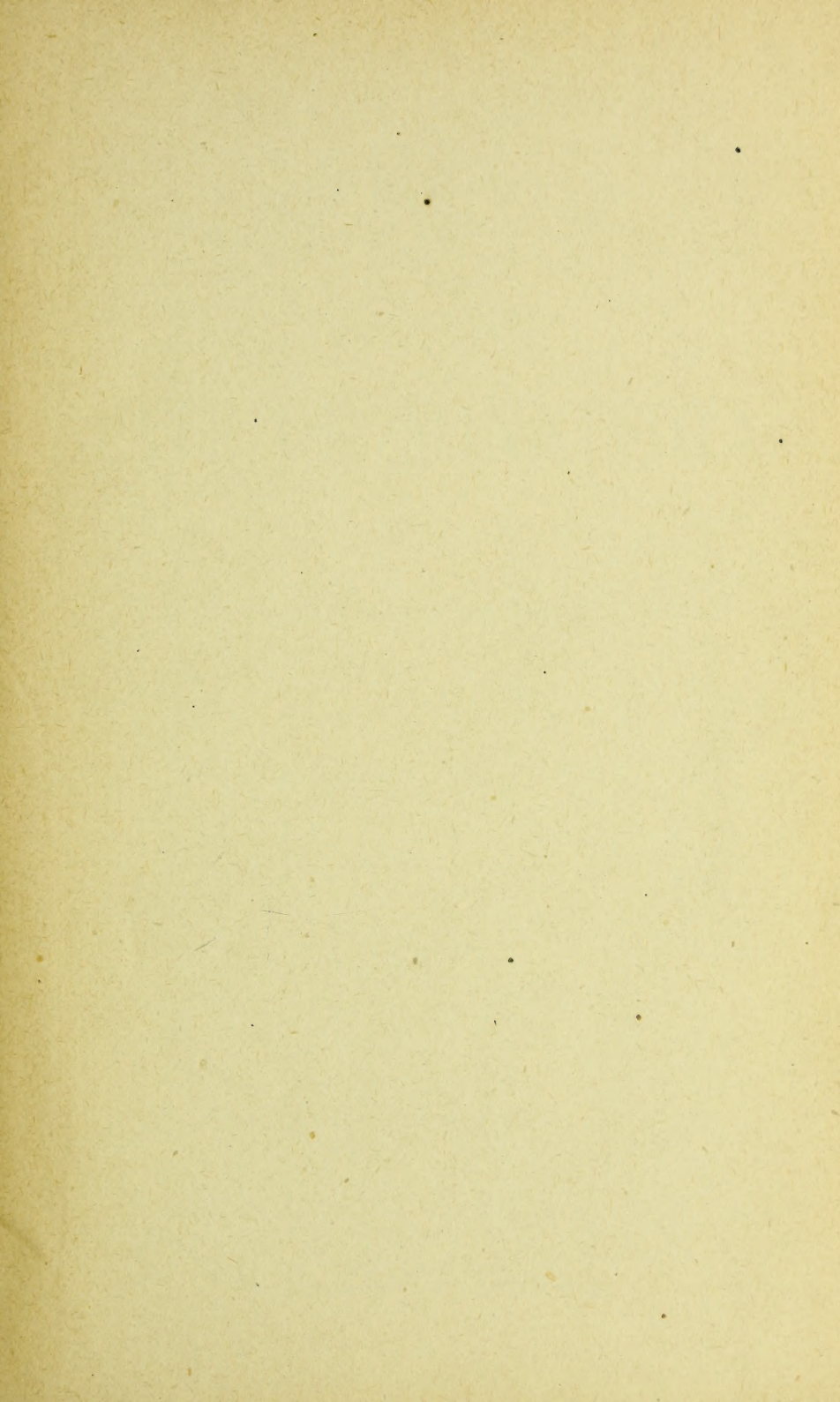
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VOL. 2.

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# THIRD BIENNIAL REPORT

OF THE

## BUREAU OF LABOR STATISTICS

OF THE

### STATE OF MINNESOTA

---

1891-1892

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L. G. POWERS, Commissioner.

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*E. B. EVANS, Clerk.*

*FRANK VALESH, Deputy.*

*F. J. CASSERLY, Factory Inspector.*

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MINNEAPOLIS:  
HARRISON & SMITH, STATE PRINTERS

1893



STATE OF MINNESOTA,  
OFFICE OF THE BUREAU OF LABOR STATISTICS, }  
ST. PAUL, MINN., January 2, 1893. }

*To the Honorable the Senators and Representatives of the Legislature of the State of Minnesota:*

GENTLEMEN:—I have the honor to transmit herewith the Third Biennial Report of the Bureau of Labor Statistics.

Very respectfully,

L. G. POWERS, Commissioner.



## ERRATA.

Page 141, number 64 of the table, for "Excavators" read "ocean navigation."

On mortgage map of the State for the year 1891, the figures for Hennepin county at the top of the county should be 147.37, and for the bottom of the county 59.68.

In Table X of mortgage foreclosures and redemptions in Polk county, on page 406, in the figures for Woodside township, the acres of foreclosed land for 1888 and of land redeemed in 1888 should in each case be 143.25.

In the same table, for the township of Euclid, page 411, the redemption given for the year 1889 should have been tabulated in the year 1888.

To the same table, under the proper townships, should be added the foreclosures omitted by mistake in tabulation:

TOWNSHIPS AND YEARS.	FORECLOSURES.			
	No.	Amount of Mortgages.	Number of Acres.	Amount of Decrees.
Garfield— 1883.....	1	\$300.00	80	\$404.88
Red Lake Falls— 1882.....	2	6,500.00	219.95	3,250.00
Liberty— 1889.....	1	118.66	160	167.45
Northland— 1891.....	1	67.50	160	105.42

## INTRODUCTION.

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### THE FUNCTION OF BUREAUS OF LABOR STATISTICS.

Twenty-four years have elapsed since Massachusetts, in 1869, by resolution, established the first bureau of labor statistics in the United States and in the world. The good results following the establishment of that bureau have, in the intervening years, led to the creation in the United States of a national and twenty-seven different state bureaus. Such bureaus have also been called into being in the various countries of Europe. The rapid multiplication of these bureaus has been stimulated by the growing interest in industrial and social problems. The rapid accumulation of wealth in the past century, the wonderful changes in the industrial world, the results of modern inventions and discoveries, the organization of labor and a host of allied causes, have all united to usher in a new social and industrial order. This new order brings with it a thousand and one perplexing problems demanding solution. The need of such solution calls for facts. To gather, systematize and give those facts to the public has been from the outset the province of these bureaus of labor statistics.

The law of Massachusetts creating its bureau, as the present law of Minnesota, has but few and simple provisions. But with the development of these bureaus and the growth of their work many important issues have arisen calling for additional legislation. Such legislation is now needed in Minnesota to place the department in line with the best of such bureaus in other states. A number of amendments and additions to the statutes of 1887 and 1889 should be made. Among those herewith recommended for adoption none can be considered of more importance than a law making

### BUSINESS COMMUNICATIONS TO THE BUREAU CONFIDENTIAL.

Such a law is needed to protect the interests of business men against the possible treachery of dishonest or careless employes of the bureau. It is required to shield the commis-

sioner against the possible annoying interference of curiosity seeking intermeddlers. The statutes creating these bureaus, as a rule, require, as does that of Minnesota, manufacturers and business men, as employers of labor, to make such various returns concerning their business as the chief or commissioner of that department may call for. The information thus requested and given oftentimes involves itemized statements of the business affairs of the men and firms reporting to the bureau. It involves a presentation of facts such as are usually entrusted by business men to their confidential clerks and friends alone. No penalty of law can or should be able to secure this information from business men if they cannot rest assured that no improper use thereof will be made. In asking for this information the commissioner of the Minnesota bureau, as those of many others, has been accustomed to pledge his personal honor that all returns made to the bureau relating to the business of individuals, firms, corporations or trade unions, shall be treated as *confidential*. The pledge is given that no revelation shall be made to the general public, or to any private person, in the report of the bureau or otherwise, of the individual business or confidential affairs of any person, corporation or organization. This personal pledge on the part of the commissioner has usually been sufficient to obtain all desirable information. But the experience in the past year of a commissioner of another state bureau has demonstrated the folly of leaving this burden of responsibility upon the shoulders of any man who happens to be commissioner. In the case referred to an effort was made, through the courts, to compel the commissioner to disclose the names and the details of the business of those reporting to him under a personal pledge of secrecy, such as has been referred to above. The commissioner interested, as an honorable man, was compelled individually to spend of his own money large sums in defending a trust reposed in him by the commercial world. Probably the men bringing the suit were actuated by as honorable motives as the commissioner. But the suit and the uncertainty which it raises about the possible betrayal of confidence on the part of a weak or dishonorable officer suggests the need of legislation to regulate the subject and take it out of the domain of uncertainty. The necessity of such legislation was, several years ago, suggested to the law-makers of Massachusetts. That state, in 1886, in a supplementary resolution relating to the bureau—a resolution requiring annual returns from manufacturers—enacted a law relating to the



subject. One section of that law of 1886 is here presented as a type of the needed provision here recommended.

GENERAL LAWS OF MASSACHUSETTS FOR 1886, CHAPTER 174.

“SEC. 4. No use shall be made in said report of the names of individuals, firms or corporations supplying the information called for by this act, such information being deemed confidential and not for the purpose of disclosing any persons' affairs, and any agent or employe of said bureau violating this provision shall forfeit a sum not exceeding five hundred dollars, or be imprisoned for not more than one year.”

It is recommended that some such provision of law be enacted by the legislature of Minnesota for the government of this bureau. The State should no longer by penalty require its business men to confide the secrets of their enterprises and associations to a public official and make no provision for guarding the trust confided to him. Another subject in which the Bureau of Labor Statistics is vitally interested and concerning which the law should be more explicit is that involving the final

DISPOSITION OF THE SCHEDULES OR PAPERS RECEIVED BY  
THE BUREAU.

Some of these schedules are received from manufacturers, and others are gathered by the deputies from various sources. The substance of the papers, schedules and documents thus received or gathered by the officers of the bureau are embodied in its biennial reports. After the publication of those reports, the papers, etc., above referred to, have, as a rule, no further value. There is, however, the possibility that the officers of the bureau may, by careless or vicious methods, arrive at and give to the public faulty conclusions in their reports. The State should provide the means of correcting all such possible errors of omission or commission. It should not allow these papers, schedules, etc., to be destroyed until a sufficient time has elapsed, after any given report has been issued, in which to correct all such possible errors. Those papers, etc., should be preserved long enough to enable the commissioner or other interested party to demonstrate from them the correctness or falsity of the report based thereupon. But after a reasonable period has elapsed, and no questions are raised concerning the accuracy of a report, there should be lodged with some one authority to destroy all these useless documents of the bureau.

As the law now is in Minnesota, it is uncertain whether the commissioner has authority to destroy any of these old and

useless schedules and other papers of his department. That uncertainty all turns about this question. Are these papers, etc., a part of the public records of the State within the meaning of section 85 of the Criminal Code? If they are, then to destroy any of them makes a person liable to imprisonment for five years. If they are not documents within the meaning of that section of the Criminal Code, then the State has made no provision for their preservation. The same question has been raised in the courts of another state. The courts have there ruled that these papers are not public documents within the scope of the Criminal Code. Under that construction of the law an officer or employe of the bureau can, with impunity, destroy these papers under circumstances which may gravely discredit the work of the department. There are at present in the office of the bureau in Minnesota many schedules and papers used in the compilation of the reports of 1889 and 1891. Those papers have, at the present time, no possible value and no public interest is served by their preservation. In the crowded state of the room devoted to the bureau these old papers occupy space that otherwise may be of great service to the department. The commissioner is unwilling to destroy them under the uncertainty of the law controlling his action. The request is made that provision be made by general law to regulate the subject. The terms of the statutes should be explicit enough to prevent any one from destroying these papers so long as they may have any possible value or importance. On the other hand, provision should be made for their destruction when no possible interest, private or public, would suffer thereby. Massachusetts is one of the few states which has legislated upon the subject. This has been done in the following language from Chapter 43 of the General Laws of 1887.

“All records, schedules and papers accumulating in the Bureau of Labor Statistics, that may be considered of no value by the chief of said bureau, may be destroyed or sold as he may deem best; *provided* the authority of the Governor and Council shall be first obtained for such destruction or sale; and *provided, further*, that if such useless records, schedules and papers be disposed of by sale, the proceeds thereof shall be turned into the treasury of the Commonwealth.”

By the foregoing statute, these schedules, papers, etc., are treated as a part of the public records and not to be destroyed excepting under the conditions prescribed. Some similar provision of law in Minnesota is earnestly recommended. Either

the Governor, with the consent of the Senate, or jointly, with the Secretary of State and a number of other leading officials, the Governor may be authorized to order their destruction subject to such reasonable regulation as the legislature may impose.

#### BOARD OF SUPERVISORS OF STATISTICS.

The last few years have seen, in Minnesota, as in all the older states of the Union, a great addition to the statistical work compiled and published in the name of the State. Many different departments have grown up, each dealing with statistical subjects and each given general authority for the collection and compilation of the same. In Minnesota, as in all the other states, the authority of the several departments overlap each other. Thus, the Bureau of Labor Statistics, the Superintendent of Public Instruction, and the Assistant Secretary of State, are, alike, given authority to collect and publish statistics relating to education. In the same way other departments can and do collect at times the same class of facts and so burden the State reports with duplications or contradictions. The rapid growth of statistical work and this overlapping of the several departments, suggested, in Massachusetts, several years ago, the creation of a Board of Supervisors of Statistics. The Massachusetts law, for the regulation of that board, is found in the general laws of 1877 and in Chapter 31 of the Statutes of 1882:

“SEC. 17. The Secretary of the Commonwealth, the Secretaries of the Boards of Agriculture, of Education and of the State Board of Health, Lunacy and Charity, and the Chief of the Bureau of Statistics of Labor, shall constitute a Board of Supervision of Statistics, who shall serve without pay. A member of said Board shall be appointed chairman thereof by the Governor, with the advice of the Council, and shall have power to appoint a secretary. The board shall meet regularly at the state house at least once a month, and at other times when called together by the chairman.

SEC. 18. The board shall have general supervision of all matters relating to the statistics to be gathered and reported by either of the departments represented on the board. Any investigation contemplated by either of said departments shall, before it is made, be reported to the board, which shall so direct the method thereof as to prevent unnecessary work, and to make plain the presentation of the facts, and shall simplify and abridge, as far as may be, the statistical matter to be presented by any department represented, and when said matter is germane to that under the care of another department, shall see that such matters are consolidated and presented by one department only.



SEC. 19. A sum not exceeding five hundred dollars shall be allowed said board for annual contingent expenses."

A similar Board of Supervisors of Statistics in Minnesota could doubtless be made of great service to the State. It would save the State considerable sums of money by avoiding needless and duplicate investigations; it would lessen the printing bills; it could be made of great service to the new appointees of the several departments interested by giving them the assistance of the experience of others in the field of statistical work. In addition to the heads of the departments interested, such a Board of Supervisors of Statistics should include the State Expert Printer. His knowledge of the various ways of arranging printed matter could be made serviceable in lessening the expense of printing the reports by suggesting from the start the most economical methods of arranging the tables. The Commissioner of the Bureau of Labor Statistics has called the attention of several of the heads of departments interested in the subject to this proposed measure, and all have signified their general approval of the suggestion here offered.

#### FACTORY INSPECTION.

Under the above title, in Part I of this report, are given at length the facts showing the need for a better system of inspection of factories and workshops than is possible under the present law governing the bureau. Provisions should be made for the appointment of several inspectors in addition to the deputies now connected with the bureau. The additional powers to be granted to those deputies and to the department are all considered at length in Part I, to which reference is here made. In this connection mention is made of the fact that a request will be presented to the legislature in behalf of the railway employes of Minnesota for the appointment, in connection with the bureau, of

#### A RAILWAY INSPECTOR.

It is proposed that such an officer be appointed whose duties shall be to look after the enforcement of chapter 16 of the general laws of 1887 and chapter 17 of the general laws of 1891, and allied laws now in force or hereafter to be enacted for the protection of the lives, limbs and health of railway employes. The law of 1887 has now been in force six years. All the railroads in the State have at one time or other guarded their switches in accordance with the terms of that law. The rail-

way officials, as well as the employes, unite in saying that the law of 1887, requiring railway switches to be guarded, is a good one. But that law and all similar ones are not self-operative. Guards, after a time, become displaced, and unless someone is looking after them all the time they are missing when a critical emergency arises and human lives or limbs are sacrificed as the result. The railway employes ask that the State assume the duty of looking after the enforcement of this old law. The appointment of an officer to enforce the terms of that law is in line with the modern growth of inspection by the State of mines, factories and public buildings. The appointment of such an officer as is asked for by the railway employes is therefore heartily commended by the Bureau of Labor Statistics. If the legislature continues all factory inspection, as now, in connection with this bureau, then this suggested inspector should be added to the present force of deputies of the bureau. If, on the other hand, a separate department of factory inspection is created, the railway inspector should be attached to it and not to this bureau.

This railroad inspector, if one is appointed, should have power to order the erection of warning signals at low bridges to prevent switchmen and brakemen from being knocked off the cars while passing those bridges. The inspector should also be authorized to prescribe the form of all these guards. This latter suggestion is based upon a number of facts coming to the knowledge of the officers of the bureau. One of those facts may be given as typical of the others. One of the railways entering Minneapolis recently erected a warning signal near a low bridge in that city. The strings suspended across the track to warn the men of the approaching low bridge were properly placed and all right. But the upright posts erected to support the strings were placed so near the track that a brakeman on the side of the car would be knocked off if his car passed this upright. In fact one railway employe was thus knocked off in a few days after the erection of the guard. In that way he was seriously injured. Such a constructed guard is more dangerous than the bridge it was erected to warn the employes against. The railway officials ordered a proper guard to be erected. Their purpose could not have been better. But a bungling workman changed the humane and thoughtful order of the official into a death sentence for the hapless switchman. A proper officer, with the authority,

could so co-operate with the railway officials and employes as to prevent many such accidents.

#### FREE PUBLIC EMPLOYMENT OFFICES.

Application for the establishment of free public employment offices will doubtless be made of the legislature of Minnesota for 1893. The movement for the establishment of such offices in the United States had its inception in the year of the Paris International Exposition. At that time the Scripps League of Newspapers sent a delegation of prominent labor men to Europe where they had an opportunity of studying the industrial condition of the old world by actual observation. The notes of observation of the various labor men who thus visited Europe were given to the American public through the newspapers connected with the enterprise. Among the industrial institutions of the old world to attract the attention of the workmen who went abroad under these auspices, none at the time received a heartier commendation than the great Free Public Employment, or Public Intelligence Office of France, located in the city of Paris. Among the members of the league who studied the workings of the French office was Hon. W. T. Lewis, the present commissioner of the Ohio Bureau of Labor Statistics. While abroad he wrote an article about the Paris office, and, upon his return home, Mr. Lewis interested himself to secure their adoption in his own state. He called the attention of the working people of Ohio to the matter, and the Municipal Labor Congress of Cincinnati, an organization of all the trade and labor unions of that city, began the agitation for the establishment in Ohio of free public employment agencies. This labor congress had a bill drafted and introduced into the legislature providing for the establishment of such agencies in the five leading cities of the state. The legislature, with singular unanimity, passed the law as requested. The law created the offices as the bill contemplated and placed them under the supervision and direction of the Bureau of Labor Statistics, at the time under the direction of the Hon. John McBride. Two years later Governor McKinley appointed Mr. Lewis as commissioner, and so the man instrumental in establishing these offices in Ohio is now given charge of supervising the same. The original law of Ohio for the creation and management of these free employment offices was as follows: "Section 1. *Be it enacted by the General Assembly of the State of Ohio*, That section 308 of the Revised Statutes be so amended as to read as follows:



“SEC. 308. The commissioner shall have an office in the state house, which shall be a bureau of statistics of labor, and he shall collect, arrange and systematize all statistics relating to the various branches of labor in the state, and especially those relating to the commercial, industrial, social, educational, and sanitary condition of the laboring classes. Said commissioner is hereby authorized and directed, immediately after the passage of this act, to organize and establish, in all cities of the first class, and cities of the first and second grade of the second class, in the State of Ohio, a *free employment office*, and shall appoint one superintendent for each of said offices to discharge the duties hereinafter set forth. Said superintendents shall cause to be posted, in front of their offices on a sign board, or in a suitable place on the building where such offices are located, the words “*free employment office*.” It shall be the duty of such superintendents to receive all applications for labor of those desiring employment and those desiring to employ labor, and record their names in a book kept for the purpose, designating, opposite the name of each applicant, the character of employment or labor desired and the address of such applicant. Each of said superintendents shall be provided with such clerical assistance as in the judgment of the commissioner may appear necessary for properly conducting the duties of their several offices. No compensation or fee shall directly or indirectly be charged to or received from any person or persons seeking employment, or any person or persons desiring to employ labor through any of said offices. Said superintendents shall make a weekly report on Thursday of each week to said commissioner of all persons desiring to employ labor, and the class thereof, and all persons applying for employment through their respective offices, and the character of employment desired by each applicant; also, of all persons securing employment through their respective offices and the character thereof, and a semi-annual report of the expense of maintaining such offices. Said commissioner shall cause to be printed weekly a list of all applicants and the character of employment desired by them, and of those desiring to employ labor, and the class thereof, received by him from the respective offices aforesaid, and cause a true copy of such list, on Monday of each week, to be mailed to each of said offices in the State, which said list by the superintendent shall be posted immediately on receipt thereof in a conspicuous place in his office, subject to the inspection of all persons desiring employment. Said superintendent shall perform such other duties in the collection of labor statistics as said commissioner shall determine. Any superintendent or clerk, as herein provided, who directly or indirectly charges or receives any compensation from any person whomsoever in securing employment or labor, for any person or persons as provided in this act, shall be deemed guilty of a misdemeanor, and be fined in any sum not exceeding fifty dollars and imprisoned in the county jail or work-house not exceeding thirty

days. The superintendent of each of said offices shall receive a salary, *to be fixed by the council of such city*, payable monthly. The clerk or clerks required in any of such offices shall receive a salary of not more than fifty dollars per month, provided the compensation of such superintendents and clerks so appointed shall be paid out of the city treasury in which such free public employment office may be located."

The foregoing provision of law adopted April 28, 1890, contained two practical defects. No specific appropriation was made for the payment of the office expenses, and it was left optional with the cities whether they would pay the salaries of the local superintendents and clerks. A later statute of the next legislature remedied these defects and makes it obligatory upon the cities to pay the salaries of the superintendents and clerks, and by special appropriation makes provision for paying the ordinary office expenses. The results accomplished by these free employment offices during the first six months of their operation may be seen from the following exhibit taken from the fourteenth annual report of the Ohio Bureau of Labor Statistics. It shows respectively the business transacted by each of the five offices established in Ohio.

CITIES.	Situations wanted.		Help wanted.		Positions secured.	
	Male.	Female.	Male.	Female.	Male.	Female.
Cincinnati .....	1,662	1,383	1,076	1,429	867	839
Dayton.....	1,232	670	582	944	422	546
Toledo.....	1,687	729	783	1,327	712	630
Cleveland.....	2,097	857	390	2,650	471	1,385
Columbus.....	1,118	746	475	1,134	357	559
Totals .....	7,796	4,385	3,306	7,484	2,829	3,958

As the result of the six months operation of the foregoing five offices a total of 5,575 males and 3,407 females secured situations. The entire cost to the state of Ohio and to the several cities for the given time did not exceed \$5,000. In the same length of time, in the years 1891 and 1892, much greater results followed the working of the system. But with the showing here presented there was saved over and above the cost of the same a sum exceeding \$15,000. In Minnesota it is usual for a man to pay two dollars for obtaining a situation. The women, as a rule, pay twenty-five cents, although some agencies charge the women nothing. But they all charge the party hiring a woman through their agency the sum of one dollar. Most employers also pay the agency a sum of one dollar for every man

whom they engage for them. These fees amount to a total of over \$20,000 on the number here given service for an expenditure of less than \$5,000. In the last two years, as these agencies have become better known both to employers and people desiring situations, they have been able to accomplish much more than is shown by the foregoing exhibit and with practically no additional expense. The agencies thus established in Ohio are able to save the working people of that state approximately \$100,000 a year, with an outlay on the part of the state and local authorities of about one-tenth of that sum.

The operation of these free employment offices was more satisfactory the second than the first year of their operation. The business transacted that second year, ending January 1, 1892, is shown in the following summary:

CITIES.	Situations wanted.		Help wanted.		Positions secured.	
	Male.	Female.	Male.	Female.	Male.	Female.
Cincinnati. ....	4,811	3,428	3,369	3,291	2,312	2,129
Cleveland. ....	6,308	3,830	925	3,471	886	2,508
Columbus. ....	3,128	1,739	1,534	2,268	915	1,481
Dayton. ....	3,351	2,118	1,326	2,004	790	1,119
Toledo. ....	3,859	1,799	2,481	2,479	2,064	1,391
Totals. ....	21,457	12,914	9,695	13,513	6,967	8,628

The foregoing tables are the only formal reports of the offices which have come to the Minnesota bureau at the time this report was made ready for the printer. But the officials of the Ohio bureau and many other state officers of that commonwealth have personally testified to an ever increasing public satisfaction with the operation of their "free public employment offices." All agree in testifying to the fact that, as these offices become better known, their sphere of usefulness increases, and they are thus able to accomplish more for the great army of the unemployed and become of large service to the general public. As mentioned above, they save the working classes and the employers large sums of money every year. Their greatest service is in protecting the toilers from being the prey of the various dishonest and dishonorable agencies to be found in all our cities from Maine to California.

As showing something of the many excellencies and the possible evils of the free employment agencies, an extract is here introduced from an article by the Hon. D. J. Ryan, at the time secretary of state of Ohio. The extract is taken from an



article which he wrote for Frank Leslie's Weekly, and which appeared in that publication October 25, 1890. In referring to the law creating these agencies, Mr. Ryan says:

"This law is essentially an "Ohio idea," it being the first of its kind passed in this country, and with the possible exception of the Intelligence Office in France, there is nothing with which it can be compared. It has for its mission as proper and legitimate an object of state legislation as can well be thought of; that is, the reduction of unemployed labor to a minimum. Legislation of this character is usually received by the average citizen with distrust and debate. It strikes him as a direct interference of the state with private affairs, and as being beyond the legitimate province of legislation. Public opinion in Ohio has not passed such a judgment on this law. It has been generally received with approbation in the cities where it has been put into effect. This is due to two reasons: First, that the law is not a piece of political legislation; it passed both branches of the legislature with practical unanimity, receiving, with equal strength, the support of both political parties. It was as clear and clean a piece of non-partisan legislation as ever passed our general assembly. The second reason is that the law has been economically enforced, and has proved successful in its operation. \* \* \*

"The distinguishing merit of this system is that the information is free and reliable. As a rule, private employment offices are a fraud. They accept fees and applications from all quarters, whether there is any probability of fulfilling the demand or not, and in many cases they have developed into downright swindles. The desire for gain on the part of the proprietors is the greatest temptation to be false to the unemployed. Applications are taken and fees received when there is not the slightest prospect of success in finding idle workmen a place for his anxious hands to labor. On the other hand, applications are received from employers, and men and women recommended for work, who are useless and without character, so that for the workmen, on one side, it is a swindle, and for the employer, on the other, it is a cheat. When the agent of an employment office is clothed with official character, as under the Ohio law, and rendered absolutely independent of the necessity to recommend any body and everybody, and promise anything and everything, we reach the highest stage of success in employment agencies. It is this condition that gives character and standing to the officer in charge.

"The incidental reference, heretofore made in this paper, to the duty of the state to lessen as much as possible the number of the unemployed, is the strongest reason for the establishment of free employment agencies. Idle hands are prone to mischief, and the disturbances possible from unemployed labor, willing to work and yet with no prospect of obtaining it, are historical in their danger. As a rule, the unemployed gravitate to the cities, and the larger the city the larger the

gravitation of unemployed labor. It is proper, therefore, that these agencies should be established in the great cities of the state, because there they come in contact with the men and women who most need them. The capitalist that owns the mine, the factory or the mill, or the farmer that desires hands for his harvest, can send to this center of labor and procure the necessary help to carry them through the necessity of their demands. \* \* \*

Are there any objections to the law as it stands in its present shape? Yes. The provision which places in the power of the cities wherein the employment agent acts, to fix his salary, is detrimental to a wholesome operation of the law. It places it at the mercy of municipal politicians and induces official disturbances that will materially destroy its efficiency. The purpose of the law is to benefit the entire people of the state. It is to the advantage of every citizen, whether he lives in the city or in the country, that as many men should be employed as possible. Industry and employment conduce to the peace and prosperity of all, and all should bear the expense of the machinery which has that for an object or tends to that end. The expenses, therefore, of salaries and clerical work attendant upon the operation of free employment agencies, should be paid from the state treasury, and should not be dependent upon the whims of a city council.

Is there any danger in the law? Yes. Improperly administered in the hands of men who have not the good of all in view, it can become a political machine of advantage to the party in power, and an absolute injury to the innocent parties for whose benefit it was established. Happily, there are no evidences yet in this state of this danger. The law has been administered honestly and with profit, and the indications are that it will continue to be so. Viewed from every standpoint at this time "Ohio's new experiment" can be regarded as a law which benefits the people at large, and as one which is especially profitable to the employer and the unemployed."

The Associated Charities of Minneapolis has, for several years, maintained a free employment agency on a small scale in that city. Great benefits have resulted from the same in furnishing labor to people in need of small jobs. The experience of that and kindred charities, in all parts of the United States and of the world, demonstrates that what nine-tenths of the worthy poor need is not alms, but work and friendly assistance in securing the same. By the work alone, which its free agency has been able to secure for the poor of Minneapolis, the Associated Charities has more than justified the expenditures in its support. But the men and women interested in that charity, insist that the money value of the labor secured is of less importance than the influence exerted upon the character of the persons assisted. But the usefulness and value of

such a free employment agency, as that supported by the Minneapolis Associated Charities, is meager as compared with that attained by a successfully administered system of agencies such as those maintained under the law in the cities of Ohio. The experience of the city of Minneapolis, on a small scale, is, however, cited to show the practicability and value of what Hon. Mr. Ryan calls "the new Ohio experiment."

The subject of establishing free employment offices, similar to those of Ohio, was made the subject of a message by Governor Boies of Iowa. In commending the project of establishing such offices, Governor Boies says: "Few of our people are cognizant of the expense to which laboring men and women are often subjected, in seeking employment through private intelligence offices. It is not, I am told, unusual for those securing work, through these agencies, to be required to enter into written agreements, by which, in addition to a fee paid, when they become an applicant for a position, they are required to pay to the agent a considerable per cent. of their earnings for a long period of time.

"In nothing is the state more deeply interested than in the continuous employment of its laboring classes. Any system which would furnish reliable information, to both employers and employes, could not fail to prove of great value to both. The Commissioner of Labor Statistics recommends the establishment of a free employment agency in connection with his office, through which it shall be practicable for those seeking employment and those in search of employes to obtain reliable information without expense to either.

"I most heartily concur in this recommendation. The expense of this office, in connection with the Bureau of Labor Statistics, can be confined within the limits of an appropriation sufficient to pay the necessary stationery, and the salary of a single clerk. In my judgment, the system should be so extended as to allow cities of the first class to establish, at their own expense, and in their own discretion, like agencies in connection with some one of the city offices, and give them the right to demand of the state office, without expense, information upon any matter of record in that office, which may prove of value in conducting the business of these local offices."

The Missouri Bureau of Labor Statistics, Hon. Willard C. Hall, commissioner, made an exhaustive study of the working of the Ohio system of free employment agencies. To that end a special agent of the Missouri bureau visited the state of



Ohio, inspected the practical operation of the offices in the several cities, and made inquiry concerning the results achieved. Hon. Mr. Hall makes a lengthy report concerning the subject. From that report is copied the following extract. As Mr. Hall is one of the ablest and most careful of American Commissioners of Labor, his words should be entitled to a careful consideration. Among other things, Mr. Hall says:

"The practical results of the free employment office may be summarized and recapitulated briefly. \* \* \* During a period of less than six months, dating from the opening of the offices in the five principal cities of that state, 8,982 persons were placed in situations through this medium, out of 20,136 applicants, thus starting out with a showing of almost 50 per cent. in the placing of persons at work, as against those seeking the same. In spite of hindrances, incident to the establishment of a new departure, without a model on this continent, the percentage of situations secured is gradually getting higher, and the general efficiency of the offices has been in every way advanced. The character of employment provided has been of a better class, and the average skill and intelligence of the applicants materially raised.

"But however encouraging these statistics, mere figures do not always form a basis from which to pass judgment. The best argument in favor of the free employment offices is the self-evident practicability of the system. This would still hold good were the results so far accomplished but half what has been shown. Viewing labor as a commodity, for the sake of illustration, the system conforms strictly with the plan of dealing with all standard articles on the basis of supply and demand. In order that the largest amount of a commodity may be disposed of with the least possible waste of time and energy, it is necessary that there should be some common ground where supply and demand meet, and where, as near as possible, one may be adjusted to the other. If there were no established places of buying and selling, no public markets, no union stock yards, no boards of trade, all commodities of life would have to be hawked about the streets, or await a customer at an established office or private place of business. Such an arrangement would be going backward fifty years, entailing an unnecessary amount of time and energy. Yet, in the absence of the public employment office, he who has the commodity of labor to dispose of, must trudge from door to door trusting to chance for a purchaser. His failure to find one is not so often due to lack of demand as to his ignorance of where the demand exists. If there were some source of information to which he might apply, the time spent in looking for employment could be utilized in money making, and unnecessary waste of time avoided."

"A great deal might be said from the humane standpoint where labor is considered something more than a commodity. \* \* \*

Next to assisting the unemployed in procuring the means of livelihood, the chief benefit is the protection afforded them from the unscrupulous employment agents, so-called, who pray upon their misfortunes. Their nefarious practices and the great amount of money taken each year from the laboring classes by these leeches in Missouri, is fully set forth in the last annual report of this department, and to which I respectfully call attention in this connection to avoid repeating the information there contained.

"The private employment bureaus which flourished in Ohio have almost, if not quite, disappeared in the five cities provided with the free employment offices. In Columbus six of these institutions were supported by the credulity of the working people at the time the state office was opened. Not one now exists. The same may be said of the four other cities under the same conditions. Exposure of the methods employed by these private agencies reveals a system of robbery which should long ago have been crushed out. It is estimated that they annually cost the working people of Ohio over \$100,000, for which but little, if any, return was ever given. It was told to the agent of this bureau that the proprietor of one of these institutions, located at Columbus, Ohio, who robbed the people so recklessly, that he was forced to leave the city to escape the wrath of his victims, confessed that the money, in response to his descriptive advertisements, flowed in on him in such quantities as to actually frighten him. It has been said that if the free employment offices accomplish no other result than the protection of the working people in this respect, they would amply repay the comparatively small sum expended in their maintenance. \* \* \* There is a growing interest in these institutions on the part of both employer and employe. The former no longer confine their calls to unskilled or domestic help. Book-keepers, mechanics and nearly every class of help are filled through these offices, and in time they will be more appreciated by all classes of society, for they are like the post-office, where all may meet to receive and distribute intelligence. \* \* \* In these offices, the superintendent, by the exercise of an intelligent interest in his business, becomes well informed on all matters pertaining to the employment of help, and is able to give valuable advice where he cannot furnish other kind of relief. Particularly is this true in warning unsophistical people who ask for advice in answering delusive advertisements for agents, etc., where a deposit of money is required. He is also in constant receipt of communications from out of town people, in many instances young girls, who desire employment in the city. By being able to answer these intelligently he can, in many cases, confer the object desired and in others prevent disappointment and useless expense."

In addition to the foregoing facts thus stated in the language of Commissioner Hall, it is added, from the study of the subject by the commissioner of Minnesota, that these offices are of great value in lessening the chance of simple country girls being led into lives of shame. As these free agencies become known and trusted, these country girls more and more depend upon them, and their liability of falling into the hands of dishonorable villains is greatly lessened. This fact alone commends these institutions to the consideration of all those who are concerned in protecting the innocent and unwary from the wiles of the unprincipled.

In part three, of this report, reference is made to the system of free employment agencies maintained by the cigar-makers, the German printers and some other craftsmen. Those systems have proved of inestimable benefit to the members of the several trades supporting them. They have been and are of vast power in assisting the members of the several crafts to improve their condition in life. The members of all the trades unions have then in their organizations more or less of experience of the value and the limitations of these free agencies. They see that a single union cannot cover the whole field of labor as it ought to be done for the good of their own members or for the welfare of society. Hence, as has been mentioned above, the trade unions of Cincinnati were the chief instrumentality in securing the establishment of these free agencies in Ohio. It may be added that, wherever the attention of these unions has been called to the subject, they have supported the movement for the establishment of these free agencies.

There are many grave questions about the propriety or advisability of having the work of factory inspection assigned to the bureau of labor statistics. The subject of so uniting the proposed work of factory inspection with this bureau is treated of at length in part one. But whatever may be the doubts raised concerning the advisability of a union of factory inspection with the statistical duties of this bureau, those doubts do not apply to the proposition for creating free employment agencies under the general direction of the bureau. It is and should be the duty of the superintendents of such proposed agencies to collect all possible information concerning wages, the condition of the unemployed, the demand for labor and kindred topics. The success of these agencies, in large measure, depends upon securing this information. The collecting of this



information must also always be one of the most important functions of the bureaus of labor statistics. The bureaus can obtain a portion of this desired information better and in a more reliable form through these employment agencies than by any other instrumentality, or by any other way. On the other hand, the local employment agencies of cities need some central directing body and, for the converse of the reasons stated above, that is best found in the bureaus of labor statistics. Each supplements and assists the other. Each finds its agencies for performing its duties aided by its union with the other. This fact was foreseen by the framers of the Ohio statute, and the superintendents of the local agencies have, as a part of their duties, the collection of statistics for the bureau. Experience has demonstrated the mutual helpfulness of these agencies and the bureau. It shows that the small sum appropriated by Ohio from the state treasury for the support of these agencies has strengthened the bureau as well as aided the unemployed to work.

The American idea of Bureaus of Labor Statistics has been taken up by many other countries. Among the states thus to establish such bureaus is the British Colony of New Zealand. That colony, when it established its Bureau of Industry, made a free employment agency a most important part of the same. In fact the need of some such agency was the predisposing factor leading to the creation of the bureau. As furnishing some information in relation to the subject of such free agencies, the following extract from the first report of the New Zealand Bureau is given:

"The objects desired by the government (in the creation of the bureau) were the compilation of statistics concerning the condition of labor generally; the establishment of agencies for reporting the scarcity or overplus of workers in particular districts; the transfer of such workers from overcrowded localities to places needing labor; and, generally, the control of all industries for the physical and moral benefit of those engaged therein.

The pressing difficulty, at the time the bureau was inaugurated, was the presence of unemployed labor in the chief towns of the colony. The centralizing tendency of modern institutions is one of the predisposing causes of this plethora of workmen appearing in the cities, aided by the displacement of hands by labor saving machinery on farms. \* \* \* It was necessary that some outward set should be given to the human tide, and that every facility should be given to laborers to proceed to available work in out districts."

“For this purpose 200 agencies were established, for economical reasons, the agents being selected from officers already in the government service, and in the country districts the duties being allotted to sergeants of police and local constables, as these officers are thoroughly acquainted with the needs and capabilities of the population surrounding them. These agents forward, on the last day of every month, a schedule stating particulars as to unemployed persons in their district, and make report as to the various works, private and public, (if any,) in their locality needing workmen. In this manner the minus or plus quantities of available labor can be generally equalized.

“On unemployed persons presenting themselves for engagement, their names are entered upon schedules which declare (for statistical purposes only) the age, dependent family, time out of work, etc., of each applicant; and suitable employment (if possible) is offered, men with families having preference. They are assisted by means of railway passes, in some cases given free to those seeking work for themselves, but given to those proceeding to engagements only as advances, orders on employers against future wages being signed by the men. Most of the said orders on future pay are honored when matured.

“Every effort, short of espionage, is used to ascertain the bona fides of applicants and to prevent the railway passes falling into the hands of rogues. Few, it is believed, of the loafing fraternity, have defied the scrutiny of the department, the true loafer rather desiring to loiter about the streets of towns than to be sent to heavy work in bush districts, where he must either toil unremittingly or starve.

“The results of the establishment of the bureau are encouraging in the extreme. The congestion of labor in the large towns was reduced, and a true test applied to those who declared themselves as in want of work. The total number assisted to employment from the first of June, 1891, to the last day of May, 1892, is 2,974, of whom 2,000 were sent to private employers and the others to public works. \* \* \*

“It has been found that the information gathered and disseminated by the bureau has been of great service to those who have not become destitute nor applied for free passages. Much time and money were formerly spent by those seeking employment wandering through districts already glutted with workmen, while in other unknown places labor was in demand. That has now been altered, and undoubtedly to the gain of both employer and employed.

“Other attempts are being made by the bureau for the benefit of the deserving workmen needing employment. The system by which Cook’s tourists enjoyed certain advantages of reduced prices, etc., when journeying for pleasure, has been partially applied to others traveling for necessity. This is done by the issue to the bureau agents of labor coupons, which are given in small quantities to unemployed in country districts, and which enable the bearer to get food, bed, etc., in

certain hotels and lodging houses at reduced rates. Employment being obtained, the coupons are no longer allowed to be used, but full prices are charged."

The foregoing long extract from the New Zealand report is given, not because the whole system is workable in the state of Minnesota, but to show how the idea of a bureau of labor statistics can be adjusted to meet the special exigencies of a country. The experience of the New Zealanders and that of Ohio demonstrates that facts about the unemployed, to be of any value, must be joined with an employment bureau or agency, and not given in a formal report to the legislature two years after the time when the data were collected. The original idea of statistics, about the condition of labor, the number and location of the unemployed, logically leads to the creation of free employment agencies on some plan suited to the special conditions of any given country. The form best adapted to Minnesota is that which has been adopted in Ohio. Many suggestive thoughts, however, are raised by the experience of the Island Colony at the farthest side of the Globe.

The directory of the city of St. Paul, for the year 1892, gives the names of 21 individuals or firms acting as employment agents. The directory of Minneapolis contains 17 such names; that of Duluth seven, and Winona two. In addition to the foregoing there are similar agents in Stillwater and elsewhere, and the total of such agencies in the State can not be less than fifty. These agencies are in receipt of incomes varying from \$500 to \$10,000 per annum. To support the whole number of these agencies in Minnesota its citizens pay each year not less than \$100,000, and possibly not less than twice that sum. Ohio saves its citizens such expenditures by the total payment by its five leading cities and the state of about \$10,000 a year. A like saving can be effected in Minnesota by the establishment of similar free employment agencies. It is in view of this fact as well as the other facts given hitherto in the language of the commissioners of Ohio and Missouri, the Ohio Secretary of State and Governor Boies, of Iowa, that the Commissioner of the Minnesota Bureau of Labor Statistics heartily commends the proposed establishment of free employment agencies in this State.



## PART I.

# FACTORY INSPECTION.

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### INTRODUCTORY.

The law creating the Minnesota Bureau of Labor Statistics makes it one of the duties of that Bureau "to visit and examine factories, workshops, and other places where people are employed at any kind of labor, \* \* \* to examine into the methods of protection from danger to employes and unsanitary conditions in and around the establishments and make a record thereof."

In compliance with the foregoing provision of law governing his action, the present Commissioner of the Bureau, soon after he entered upon the discharge of his duties, began a systematic inspection of the most important factories and workshops of the larger cities of the State. By the terms of the law, the Commissioner is not directed or even authorized to demand of the factory owners or operators any changes in their fixtures or machinery to make their establishments safer and healthier for their workmen. The law simply directs the Commissioner, by his deputies, to make a record of all that is found to be dangerous or unsanitary in the places where labor is employed, and to report the same to the legislature.

That the bureau might be prepared to make a proper record of the condition of the workshops of the state, the Commissioner and his deputies carefully studied the reports of all the factory inspectors of the United States. They examined all the practical devices for rendering machinery safer and gave attention to the general subject of the proper sanitary regulation of factories and workshops.

### NECESSITY AND VALUE OF FACTORY INSPECTION.

The Commissioner also conversed with a number of experienced factory inspectors of other states and with manufacturers in those states concerning the value of an intelligent system of factory inspection. The large employers of labor thus interviewed expressed themselves of the opinion that wisely directed factory inspection was of great value to the average manufacturer. This opinion was based upon their experience of factory

inspection in their own states or cities. One of those manufacturers thus interviewed, a large employer of labor in the city of Chicago, Ill., said:

"State or municipal factory inspection is today a necessity for the average large manufacturer. Competition in business is so keen that the members of a firm must give all their time and energies to the management of their business. They have no time to study safety devices, and, as a rule, are not specially fitted for that work even though they had the leisure. And yet without proper safety devices in their workshops they are liable at any time to be compelled to pay large sums for damages which their workmen have sustained while in their employ. A factory inspector, making the subject his one care and study, can show the busy manufacturer many devices that will at once protect the worker's lives and limbs and also guard the employer's pocketbook."

Having found the foregoing to be the testimony of the average intelligent manufacturer where a good system of factory inspection has been in force for a series of years, the Commissioner interviewed a number of the leading employers of labor in Minnesota. With these men he discussed the possibilities of the service which a wise factory inspection could do for the employers in this State. As a result of those conferences the Commissioner determined upon the following

#### SYSTEM OF FACTORY INSPECTION:

A deputy of the Bureau, one who had carefully studied the subject of machinery and safety devices and that of the proper sanitary regulation of factories, visits and carefully examines as many of the workshops of the State as his time will permit. He records the changes which he thinks ought to be made in the places visited in the interest of the safety or the health of the operatives. This is all that the law governing the Bureau specifically requires. The deputy, however, in addition to this, calls the attention of the factory owner or manager to the several changes in his establishment which he would recommend. In this way the deputy, acting as factory inspector, has visited a large proportion of the most important factories of the State at least twice and many of them five and six times in the past two years. He has seen fit to make a large number of recommendations. Those recommendations are given in detail and are also summarized in this report. They exhibit the defective conditions of those establishments when first visited by the agent of this Bureau. This report also shows how far the employers of the State have complied with the suggestions offered. It will be seen that a large number of employers have at least partially complied with the recommendations of the Bureau. Some have adopted all the suggestions made and less than one-fourth of the whole number have totally ignored the same. The Commissioner has carefully compared

#### THE RESULTS ACHIEVED

by this method with those reported from other states under a more perfect law. He finds that these results are as great as were anywhere achieved the first year under any system of factory inspection. The things accomplished are, in a great

measure, due to the zeal, energy, and general fitness of the deputy assigned to this branch of the Bureau work. This deputy, Mr. Frank J. Casserly, has demonstrated the value of this branch of State work in behalf of the toilers. To him should be given, in large measure, credit for what has been accomplished in this department of the activities of the Bureau.

It has been said above that the results achieved in Minnesota are equal, comparatively speaking, to the things accomplished elsewhere during the first year's administration of a more perfect law. Factory inspection is not something which anywhere has or will reach perfection in a single year. It is progressive because educative in its results. The world has to be taught the value of human lives and be shown how to make the persons of the workers safer. Only a few men will try new devices when first presented. The mass of people, whether employers or employes, want others to try experiments, and only after they see a tangible proof of its value will they adopt anything new. Hence the slow adoption at first of any scheme of making human life more secure. Hence also the necessarily progressive and educative work to be done in the practical introduction of any scheme of factory inspection.

The introduction of safety devices is at first everywhere an appeal to the humanity, intelligence, and self-interest of the manufacturer. The successful factory inspector must, in the beginning, rely more upon reason than upon the power of penalties. The public must be educated to see how machinery can be made safer and factories more healthful, and through this education a public sentiment created which will enforce the better way upon the few who are slow of comprehension or hard of heart in their action towards their workmen. The appeal to reason, self-interest, and humanity upon which the Bureau has solely relied for the past two years in its work of factory inspection is all that can wisely be used at first in the introduction of safety devices and sanitary conditions of factory life. They are all that are ever required with the great majority of reasonable employers. But there are a few men who are very difficult to move where an outlay of money is called for in the interest of humanity. These men can be reached only through the penalty of a properly drawn factory inspection law. It is these individuals who make it imperatively necessary for the present factory law of the State to be amended and authority given some one to compel them to do what is at once for their interest and the welfare of those working for them.

In his work of factory inspection Mr. Casserly has found some more ready than others to adopt safety devices. The character and experience of these men show how the introduction of safety appliances must ever follow a process of education. The persons who have been the most ready to accept the recommendations of the Bureau are individuals who have previously had their attention directed to the subject. Some of these have begun to study the question from its humane



aspects. They wish to do all that by any possibility is in their power, as kind hearted and intelligent beings, to make the lot of their workmen a more desirable one. Others have been forced to consider the problem from the expensive litigation and judgments resulting from personal injuries to their workmen. The man who has paid out from five to twenty-five thousand dollars for damage suits is always ready to investigate any plan that offers a chance for lessening his liability for such forced expenditures. When feelings of humanity are dead, the sensitive pocket book will respond if only you can touch it in a heavy judgment for personal damages to an injured workman.

#### PROGRESS IN THE WORK.

The Bureau has found its work, in connection with the subject of factory inspection, easier the second year than it was the first. More manufacturers have begun to see the value of factory inspection to themselves, and, as a consequence, they take a greater interest in the same. Many who the first year met the inspector with curses of refusal, after the experience of a costly accident, are the most friendly of co-operators. And all are willing to discuss the subject as one which appeals to their self-interest.

This experience but repeats the history of factory inspection in other states. Like every improvement in society it takes time to make its way in public confidence. The average man is conservative. Whether an employer or employe he clings to the old ways and adopts new ones only after he sees clearly how he will save money or secure some other advantage thereby. Personal experience is the only test of safety devices. The average man, employer or workman, does not know the chance of accident in connection with any machine. One function of bureaus of inspection in all states is to collect the data relating to accidents in workshops and to show the world just what is the operator's liability to accident with all machines. It is this knowledge spread before the people, even more than the penalties imposed by statute, that is making factory inspection more and more a factor of modern life. No legislature in this country or in Europe has ever repealed a factory inspection act. Everywhere that such legislation has been begun, there have been progressive changes with the passage of the years. Those changes make the bureaus of inspection more and more valuable instrumentalities for furnishing desirable information, and at the same time clothe the bureaus with greater power and wider scope of action.

#### THE GROWING PUBLIC FAITH IN FACTORY INSPECTION.

First established only a few years ago as the result of the agitation of organized labor, the modern system of factory inspection in America has so far commended itself to public esteem that both the Republican and Democratic parties, in their national platforms for 1892, call upon the several state legislatures to enact laws creating such bureaus of inspection.

Such laws justify themselves in two ways at least. First, they are the means of saving the manufacturer money. They lessen his liability for personal injuries to his workmen by removing the causes of accident. Secondly and mainly, legislation for the protection of employes in factories is demanded by reason of the fact that to save life is the highest duty of humanity. Motives of humanity should dictate the enactment of such laws even though they placed a heavy financial burden on the owners of factories. But when humanity to the workers can be secured, and the financial interests of the employer advanced simultaneously, every principle of statesmanship, every maxim of business sagacity, and all dictates of Christianity call for this class of legislation now commended by both great political parties of our country.

#### SELF-IMPOSED DANGER.

In speaking of factory inspection in general and more especially of its adoption in this State, reference has thus far been made mainly to the employers of labor. The fact has been referred to that some employers have complied with the changes suggested by the Bureau while others have totally disregarded those suggestions. Such a reference would be doing an injustice to the employers, as a class, unless it was joined with a corresponding statement of the action of the workmen. Some men make a distinction between the human nature of employers and that of employes. Some see all virtues included in the ranks of the workmen and all vices in those of their employers. Others would reverse this. The inspector of factories does neither. His experience shows conclusively that employers and their workmen are made of the same material and are subject to the same human frailties, limitations, and imperfections. A few workmen as a few manufacturers are willing to adopt new safety devices when they are presented to them. They are the progressive spirits, the wide awake men, anxious and striving to improve their lot in all possible respects. But while the few are thus always ready to adopt new things when presented, the great majority prefer "the old way." Though a man's life may be in constant danger under an old way of working, and though new appliances may securely protect the workman from harm, yet safety devices, if new, are something to which the man is unaccustomed. If he has never been the victim of an accident, this newness of the device will cause him, in the majority of instances, to be averse to making use of it. Men who act in this way are to be found in every shop and factory in the land. The more ignorant a man is the more he is predisposed thus to act. At least this is the experience of our inspector in Minnesota, and other inspectors report the same from other states and countries. Sometimes it seems as if the greater the danger from any given piece of machinery, the more indifferent does the workman become to his danger while operating it. Why this is so is usually very difficult to understand, but such is the fact.



Factory owners without number in this and other states have, at some expense, procured guards for the machinery operated by their men. But because those guards required a slight change in the method of operating the machinery from the one first acquired by them, the men, time and again, ask for the privilege of removing the guards. Sometimes they will take them off in spite of the most positive directions or commands of the employer. With men who thus act there is absolutely no use of reasoning. There are none so blind as those who will not see. Experience in other states and other factories counts for naught. Personal and painful experience is all that will finally satisfy. This corresponds in the case of the workman to the costly experience of a damage suit to the employer.

The inspector can only recommend in this State at present. He can not compel the adoption or the continued use of any safety device. He can bring to bear upon the manufacturer no powerful or continuous pressure in favor of what his judgment or the experience of the world testifies to be safe and desirable. His influence is that for the time of the interview or inspection. If by an appeal to the common sense of the employer he satisfies him and the latter orders some safety devices for his establishment, the state of affairs may arise already set forth. The men ask to be permitted to lay aside the guards. They clamor for this permission every time that the employer comes into their presence. The man of weak will or vacillating judgment yields, and that factory is without guards until some startling accident at once shows the men their folly and gives the master some practical evidence of the importance of the use of all possible safeguards to machinery.

If a workman removes the guards without the knowledge or consent of the master or foreman, then the latter is absolved from all legal as well as moral responsibility for injury to the offending employe. But unguarded machinery often injures visitors or innocent workmen as well as the man who operates the same. The master is holden for all these damages. Again, sometimes the workmen go to the boss and say if you will allow us to remove the guards we will assume the risk. This is the argument that often moves the master who has adopted safeguards at the solicitation of a factory inspector. But it is worth while to ask how does a consent to remove under this proposition affect the master's liability? It doubtless does in Minnesota lessen the responsibility of the master to the workman so contracting. But it does not lessen but rather increases his responsibility towards any innocent party who may be injured by a machine thus left unprotected. This increased responsibility towards others more than compensates for any lessening of the same towards the silly workman who assumes risk of dangerous machinery rather than use any new safety device. Again, the statutes and the rulings of the court in some states say, that if a master consent to the removal of a guard which is known to be reliable, the master becomes a party to



any accident and must be legally holden for the resulting damage. No contract with his workman can lessen this liability. These laws of other states are based upon the moral law of joint responsibility and should everywhere prevail.

The foregoing facts are mentioned to show the necessity for firmness on the part of the employer who would lessen his liability for damage suits following accidents in his establishment. The employer who becomes satisfied in his own mind of the value of any appliance for lessening danger must choose between two things. He must insist upon the use of those appliances and be ready to discharge any workman who removes them, or he must trust to experience, the costly schoolmaster of fools, to teach, by painful and costly accidents, the economy of all wise precautions against the possibility of accidents in the workshops of the present.

In this connection it may not be out of place to give the following

#### TYPICAL CASE OF HEEDLESSNESS TO DANGER.

An employer in a furniture factory in this state, at the recommendation of the factory inspector, adopted some guards for his buzz saws. The guards chosen reduced the liability to accidents almost to zero. The workmen finding a slightly different method of procedure made necessary by the change did not take kindly to them. They begged and entreated the employer for the privilege of removing the guards. He showed them the danger which would follow such removal. They declared that they did not care for that danger. They were willing to assume all risk if only they could operate the saws without the guards. Now, as was shown and admitted later by the men, more and better work could be done with the guards in place than with the saws unprotected. But after a while, wearied out by these importunities, the employer consented, and in less than a week one of the men lost his fingers. Not until this did the men cease objecting to the use of the innovation in the shape of the guards. They replaced them and, when a few weeks later, the inspector called by chance at the factory, he asked the men how they liked the guards. They all said they were a good thing. Then they added, "We have got used to them." This getting used to safety devices is the great element in their introduction. To make men "used to them" is all there is to the enforcement of a good factory inspection law.

Thus has it been with varying degree all over the State and nation. Bitter experience is the only schoolmaster that some people will accept. No amount of evidence seems to be sufficient to convince some men of the reckless and criminal risk that they assume in directing as owners or operating as workmen, dangerous machines without having them guarded by all the known devices possible. They seem to be amenable to no argument, no reason. In the case of the workmen we see the criminality of their heedlessness when we consider its possible relation to their families. When death occurs, or when an

accident cripples them for life, the support of the family is gone. The dependent ones are thus oft reduced to beggary and pauperism. There can nothing be collected from the master, since the workman removed the guards furnished by him for his protection. The criminality of the employer is shown in the case of the few who will do nothing for the safety of their men simply because there is no law to compel him to do right. It is here that is found the

#### VALUE OF A STRONG FACTORY INSPECTION LAW

with its penalties for non-compliance with the recommendations of the inspector. Such a law does not affect the majority of employers who are wide awake to their interests and have backbone enough to enforce reasonable regulations in their shops for the protection of their own pockets and the welfare of their employes. It reaches the selfish boss and forces him to do what is just and fair. And, more than all else, a good factory law gives backbone to those employers who are naturally striving to do what is right, but have not the nerve to withstand the importunities of ignorant conservatism and carelessness on the part of some of their men. The careless workmen tend to make the weak employer careless. The factory inspector, with the penalties of a good law, will, for these men, counteract the influence of carelessness on every hand. He is always looking after the heedless ones. He is the friend and confidential counselor of the wide awake and well disposed employer. He is the terror to the few who need the pressure of law. He gives backbone to the weak. He is the force in society that compels, or the teacher who instructs the workmen and causes them to "become used" to all practical safety devices that may from time to time be invented. In this way the law accomplishes its two ends. It protects the workman whether he wants to protect himself or not. It guards the financial interest of the employer. Thus it aids in the solution of the great labor problem of our time by leading the world to see how the real interests of employer and employe, of labor and capital, are identical, and not antagonistic.

In speaking of the carelessness and heedlessness of some employers and operatives the term criminal was applied to them. This was done in no rhetorical sense, but with the words of the Minnesota statutes before the writer. Those statutes make

#### THE EMPLOYER CRIMINALLY LIABLE

in whose shop a life has been lost which would not have been sacrificed had "ordinary caution" been used in guarding the machine which unguarded produced the death of a human being. This fact is not generally known. Possibly no conviction under this law has ever been secured in this State, simply because no prosecution has been made under it. But the law is in force and employers should know the full extent of the risks assumed by them under the law as it is when they neglect



or refuse to use "all ordinary caution" in guarding their machinery. They, at least, can not plead "ordinary caution" when they leave apparatus unguarded which all experience calls dangerous and which any experienced factory inspector says can be made reasonably safe. The fact stands, then, that an employer who neglects to use all practicable known devices for lessening the risk of his workmen is thereby rendered liable to indictment for manslaughter in case death to any one results from his want of care or foresight. This, in addition to his liability for pecuniary damages to the heirs of the person killed. The following are the provisions of

THE PENAL CODE OF MINNESOTA, SECTION 166:

*"Negligent use of Machinery.*—A person who, by any act of negligence, or misconduct in a business or employment in which he is engaged, or in the use or management of any machinery, animals, or property of any kind, entrusted to his care, or under his control, or by any unlawful, negligent, or reckless act, not specified by or coming within the foregoing provisions of this chapter, or the provisions of some other statute, occasions the death of a human being, is guilty of manslaughter in the second degree."

The foregoing provision of the penal code is applicable both to the careless and indifferent workmen and employer. It is a dead letter, as a rule, since, in all ordinary cases of death by machinery, the penalty is greater than the act merits. The Bureau has found but very few, either masters or servants, who deserve to be tried under this severe code. A few, however, have been met with during the investigations it has conducted the past two years. An account of one of this small class of employers should be given in this connection. He has in his employ a large number of operatives engaged, many of them, in managing dangerous machinery. That machinery was totally without guards. His attention was called to this fact by the inspector who assayed to show him how the machinery could be made safer. He informed the inspector, with many brutal oaths, that he had paid over \$250 for accident insurance. If a man in his employ was hurt it did not affect him. The insurance company would defend any suit that might arise. Then he added, with other oaths, that he should not expend a cent for safeguards since there was no law to compel him to do so. This class of men should have no consideration paid to them since they give none to those by whose labors their fortunes are made.

The section of the penal code quoted does not embody the best conception of the purpose of law. It partakes too much of the nature of the wisdom which "locks the stable door after the horse has been stolen." Instead of trying simply to punish a man for killing his fellow by carelessness, legislation should endeavor to prevent the killing. This is the aim of factory inspection laws which have in the last twenty-five years been enacted in England, France, Germany, and many of the states of



our union. This is the sort of factory legislation now commended by both the great political parties of our land. This also is what is required in Minnesota to make our factory inspection all that humanity and true social economy demand.

In connection with some system of constant or continuous oversight of the factories as is now provided in Minnesota, there should be a law to compel, with moderate penalties, the adoption of all practicable safeguards in the workshops of the State. A brief consideration of the guards now known to be practicable and the sanitary requirements that should be embodied in a good factory law and allied questions investigated by the Bureau in connection with its work of factory inspection, will each be considered in this report in a chapter by itself.

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## CHAPTER I.

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### PROTECTION TO HUMAN LIFE.

Loss of life by fire when it occurs is always attended with circumstances that suggest the horrible and which appeal to the sympathy and the nobler impulses of all. Every person is more or less exposed, at times, to danger from fire, and hence, it is that in framing laws for the protection of human life, legislators everywhere begin by establishing rules and regulations for the safety of men and women in burning buildings. Thus, Minnesota began its legislation upon this subject in 1883. In that year it passed "An act for the preservation of life and the protection of travelers." That law embodied in the General Laws of 1883, chapter 133, is as follows:

SECTION 1. The proprietors and lessees of all buildings of two or more stories in height, used or occupied as tenements, lodging rooms, boarding-houses, hotels, public halls, or places of amusement, schools, seminaries, hospitals, asylums, workhouses, jails, or manufactories, shall provide for and equip said buildings with such protection against fire, and escape from said buildings as shall be hereinafter set forth in this bill.

SEC. 2. The classification of buildings shall be as follows:

*First*—Hotels of two (2) stories in height with ten (10) or more sleeping rooms.

*Second*—Hotels or lodging rooms of three (3) or more stories in height.

*Third*—Tenements or boarding-houses of three (3) or more stories in height, occupied by one (1) or more families, consisting of more than twenty (20) persons. Provided, a mansard roof or attic when used as sleeping rooms shall be counted as one (1) story.

*Fourth*—Buildings used as opera houses, theatres, or public halls, of a seating capacity exceeding three hundred (300.)

*Fifth*—Public school buildings, seminaries, academies and colleges more than two (2) stories in height.

*Sixth*—Hospitals and asylums of two (2) or more stories in height.

*Seventh*—Jails, work-houses, or other prisons for confinement of persons under sentence of crime or misdemeanor.

*Eighth*—Manufactories over two (2) stories in height, employing above the first (1st) story more than twenty-five (25) persons.

SEC. 3. Provides for the appliances to be used as follows:

Buildings under classification one (1) of section two (2) of this act. Each two thousand five hundred (2,500) superficial feet of area, or fractional part thereof, covered by said building, shall be provided with either an inside stand-pipe of not less than one and one-quarter (1¼) inches inside diameter, with hose connection and hose of sufficient length always attached, in the hall into which the sleeping rooms open, and this stand-pipe supplied by means of connection with public or private waterworks, which will furnish sufficient pressure; or one (1) chemical fire extinguisher kept near the public stairway or other convenient locality in the hallway, always charged ready for use.

Buildings under classification two (2). For each six thousand (6,000) superficial feet of area covered by said building, shall be provided with either an inside stand-pipe of not less than one and three-quarters (1¾) inches inside diameter, and sufficient hose connected with it, of not less than one and one-quarter (1¼) inches inside diameter, on each floor, and furnished with a constant water pressure by waterworks, or by a steam pump which can be put in action at [a] moment's notice; or for six thousand (6,000) superficial feet of area covered by said building, there shall be one (1) two and one-half (2½) inch (or larger) metallic stand-pipe with metallic ladder attached above the first (1st) story, located upon the outside of the wall and extending above the roof, and so situated as to give access to or exit from each story and roof above the first (1st), arranged with valves and male hose connections at each story above the first (1st) and roof, and with single or double female hose connection at base of pipe, so that engine hose can be attached from street, the hose couplings to conform to the size and pattern used by the fire department where located. There shall also be provided for each eight thousand five hundred (8,500) superficial feet of area, or fractional part thereof covered by said building, at least one (1) chemical fire extinguisher on each floor occupied as sleeping apartments. Provided, that in hotels where every three thousand five hundred (3,500) superficial feet is protected by stand-pipe and hose, as set forth in this act, then only one (1) chemical fire extinguisher shall be required on each floor occupied as sleeping apartments. In case the stand-pipe and hose first mentioned is not practicable for want of waterworks or steam to work pumps, then, and in addition to the extinguisher provided for, there shall be placed in each hallway of floors used as sleeping rooms, for each two thousand five hundred (2,500) superficial feet of area, one (1) barrel of water with two (2) pails with the words "For Fire Purposes Only" painted thereon. Each sleeping apartment above the second (2d) story shall be furnished with a rope or any other practical fire escape of sufficient length to reach the ground. A red light shall be kept burning all night, located at the head of each stairway above the first (1st) floor; also one (1) on each floor above the first (1st) at or near the exit to the stationary fire escape, if any. The following printed notice shall be posted in a conspicuous place in each sleeping room above the first (1st) floor: "Exit in Case of fire. Upon leaving this room turn to the (right or left) and by passing (give number of feet) feet you will reach a red light, which indicates (stairway or fire escape)."

Buildings under classification three (3) of section (2) of this act shall have for each five thousand (5,000) superficial feet of area covered by said building, at least one (1) outside stand-pipe two and one-half (2½) inches or larger, as provided for in classification two (2), and at least one (1) non-combustible ladder or stairway for each twenty (20) persons occupying said building above the first (1st) story.

Buildings under classification four (4) of section two (2) of this act shall be provided with at least one (1) stand-pipe running to the stage and furnished with hose always connected and of sufficient length to reach all parts of the stage; also, with a chemical fire extinguisher always charged and placed in a convenient place to protect the scenery; or in case the stand-pipe should be impracticable for want of constant water pressure, then, the stage shall be provided with two (2) chemical fire extinguishers and at least one (1) barrel of water and two (2) pails with the words "for



fire purposes only" painted thereon. It is provided, however, that this shall not apply to halls where no stage with curtains or scenery is used; and all buildings under this classification shall have such a number of exits of such area, and such number of non-combustible stairways, ladders, or fire escapes as the mayor, chief engineer of fire department, and chief of police of any city, or president of any town or village council, chief engineer or fire warden, and chief of police or constable of any town or village, or a majority of them may, from time to time, determine.

Buildings under classification five(5) of section two (2) shall be provided, where practicable, with inside stand-pipe, as provided in classification two (2) or an outside stand-pipe, as provided in same classification; also one (1) chemical fire extinguisher on each floor above the first (1st); there shall also be provided such a number of exits of such area, and such number of non-combustible ladders or stairways as the persons named in classification four (4) or a majority of them may determine.

Buildings under classification six (6) of section two (2) shall be provided for in the same manner as those under head of classification five (5.)

Buildings under classification seven (7) of section two (2) shall be provided with either a stand-pipe and sufficient hose connected on each floor with constant water pressure, or shall have a chemical fire extinguisher on each floor. It is provided, however, that this shall not apply to buildings built of stone, brick, or iron, with non-combustible partitions and roof practically fire proof.

Buildings under classification eight (8) of section two (2) of this act, for each two thousand five hundred (2,500) superficial feet of area covered by said building, shall be provided with an inside stand-pipe of not less than one and one-half (1½) inches diameter, and sufficient hose connected therewith of not less than one and one-quarter (1¼) inches inside diameter, on each floor, and furnished with a constant water pressure by water-works or by steam or other pump which can be put in motion at a moment's notice; or for each five thousand (5,000) superficial feet of area covered by said building, there shall be one (1) two and one-half (2½) inch or larger metallic stand-pipe, with metallic ladder attached above the first (1st) story, located and arranged as provided for in classification two (2); also, one (1) chemical fire extinguisher located on each floor above the first (1st); there shall also be provided for every forty (40) persons employed above the second (2d) story one (1) non-combustible stairway, or for every twenty (20) persons one (1) non-combustible ladder located upon the outside of the building, accessible from roof and each story above the first (1st), and reaching to or within twelve (12) feet of the ground or sidewalk; also provides that all stand-pipes, ladders, and non-combustible stairways required by this section shall be provided by the owner or owners of the building, and all other requirements of this section shall be provided by the lessees of said building, unless otherwise agreed upon between the owner or owners and lessees.

SEC. 4. Provides that the chemical fire extinguisher to be used shall be the one in general use in the fire departments, factories, and public buildings in the State of Minnesota, and known as the Babcock or Champion portable fire extinguisher.

SEC. 5. It is hereby made the duty of every fire warden, marshal, or chief of police of every incorporated town, village, or city, or, where such officers are not provided for, the board of education, directors of school districts, and board of county commissioners, to enforce this act, and any person failing to comply with the provisions of this act within thirty (30) days after being notified by the proper officer in writing shall pay or forfeit the sum of one hundred dollars (\$100), with cost of prosecution of the same, to be enforced by civil action before any competent tribunal, or imprisoned until such fine and costs are paid, not exceeding ninety (90) days; the money arising from such fines to be paid to the use of common schools of the district where such offense shall be committed."

The foregoing act is on the whole admirable in its provisions. At the time of its enactment it was one of the very best laws to be found on the statute books of any state of this union. The



experience of humanity with fires since 1883 suggests the necessity at the present day of some minor changes in this act of ten years ago. The most important of the changes thus suggested to be made in this act relate to

#### WAYS OF EGRESS AND MEANS OF ESCAPE FROM FIRE IN BUILDINGS.

The fire escape now demanded by law in Minnesota for most buildings is a "metallic ladder attached above the first story, located upon the outside of the wall and extending above the roof and so situated as to give access to or exit from each story and roof above the first." In addition to the foregoing there is required in the case of buildings used as factories, when they are more than two stories in height and employ more than forty above the second story, instead of the ladder thus described, a "non-combustible stairway" located on the exterior. Such stairways may also be ordered by certain officials upon theaters and like buildings.

A metallic ladder, such as is described in the law of Minnesota, is utterly valueless as a protection to human life in case of fire. This was demonstrated in the burning of the Tribune building in Minneapolis some years ago. Men rushed to that ladder and, reaching it, found it no help. Dazed with fright, overcome with smoke, filled with a strange excitement or affected by the great heat of the ladder itself, men fell therefrom to their death. This experience has been duplicated in every state of the union where such ladders have had a place on burning buildings. The Chief of the Massachusetts District Police (Factory Inspectors) called attention to this fact in 1879. It will try the nerve of the average man, not belonging to one of the building trades, to descend a perpendicular ladder for 50 or 100 feet even when there is no cause for fear and no excitement. But think of a number of women compelled to descend such a ladder from a burning building. In every case where such an attempt has been made some person becomes nervous, misses her hold, and is precipitated to the earth to meet a horrible fate. This is repeated until those who are to follow become so frightened at the lot of their fellows that they jump from windows to meet certain death below.

A fire escape is something that is seldom required, but when it becomes necessary to use one, it is needed indeed, and unless a sufficient number of suitable escapes are provided all efforts are but mockery. Think of twenty or even ten women in the upper story of the Tribune building at its burning. Every one of them would have perished unless some other help came to their rescue beside that furnished by a perpendicular ladder. Such ladders have in recent years been condemned by every body of intelligent men who have investigated the subject. The present law of Minnesota should be amended in some way so as to require the construction of metallic stairways for all buildings used for factory purposes where ten or more persons are employed above the second story. In this connection the

wording of the laws of some few of the other states are given. The following are sections nine and ten of the Factory Inspection

#### LAW OF NEW YORK CONCERNING FIRE ESCAPES:

"SECTION 9. Proper and substantial hand-rails shall be provided on all stairways in manufacturing establishments, and where, in the opinion of the factory inspector, or of the assistant factory inspector, or a deputy factory inspector, unless disapproved by the factory inspector, it is necessary, the steps of said stairs in all such establishments shall be substantially covered with rubber, securely fastened thereon, for the better safety of persons employed in said establishments. The stairs shall be properly screened at the sides and bottom, and all doors leading in or to such factory shall be so constructed as to open outwardly where practicable, and shall be neither locked, bolted, nor fastened during working hours."

"SECTION 10. If, in the opinion of the factory inspector, it is necessary to insure the safety of the persons employed in any manufacturing establishment, three or more stories in height, one or more fire escapes, as may be deemed by the factory inspector as necessary and sufficient therefor, shall be provided on the outside of such establishment, connecting with each floor above the first, well fastened and secured and of sufficient strength, each of which fire-escapes shall have landings or balconies, not less than six feet in length and three feet in width, guarded by iron railings not less than three feet in height, and embracing at least two windows at each story and connecting with the interior by easily accessible and unobstructed openings, and the balconies or landings shall be connected by iron stairs, not less than twenty-four inches wide, the steps not to be less than six inches tread, placed at not more than an angle of forty-five degrees slant, and protected by a well secured hand-rail on both sides, with a twelve-inch drop ladder from the lower platform reaching to the ground. Any fire-escape so constructed shall be sufficient. Any other plan or style of fire-escape shall be sufficient, if approved by the factory inspector, but, if not so approved, the factory inspector may notify the owner, proprietor, or lessee of such establishment or of the building in which such establishment is conducted, or the agent or superintendent or either of them, in writing, that any such other plan or style of fire-escape is not sufficient, and may, by an order in writing, served in like manner, require one or more fire-escapes, as he shall deem necessary and sufficient, to be provided for such establishment, at such locations and of such plan and style as shall be specified in such written order. Within twenty days after the service of such order, the number of fire-escapes required in such order for such establishment shall be provided therefor, each of which shall be either of the plan and style and in accordance with the specifications in said order required, or of the plan and style in this section above described and declared to be sufficient. The windows or doors of each fire-escape shall be located as far as possible consistent with accessibility, from the stairways and elevator hatchways or openings, and the ladder thereof shall extend to the roof. Stationary stairs or ladders shall be provided on the inside of each such establishment from the upper story to the roof, as a means of escape in case of fire."

Figure 1 shows a fire escape such as is now approved by the factory inspector of New York in accordance with the provisions of this law.

#### THE MASSACHUSETTS LAW CONCERNING FIRE-ESCAPES

is embodied in Chapter 426 of the General Laws of 1888. This act regulates the "ways of egress and means of escape form fire in certain buildings." It is as follows:

"SECTION 1. Every building now or hereafter used, in whole or in part, as a public building, public or private institution, school-house, church,



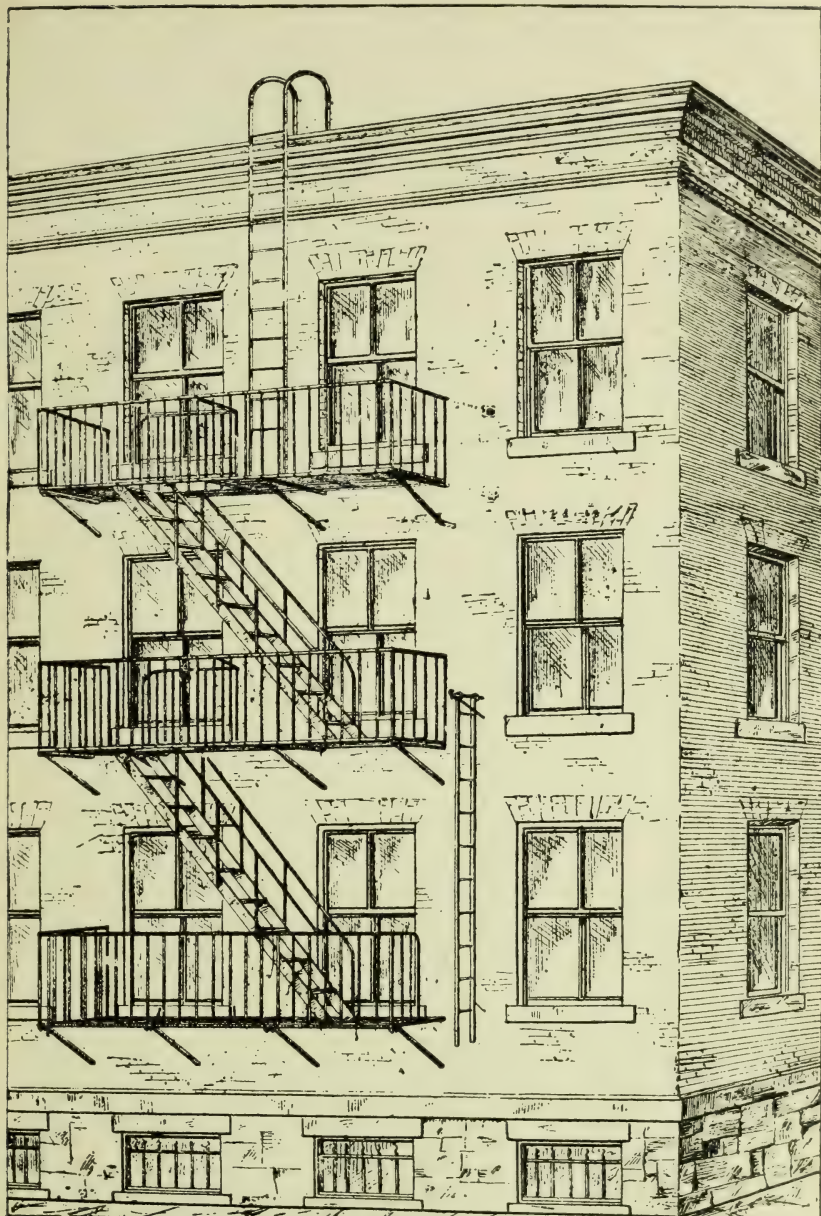


FIGURE 1. FIRE-ESCAPE REQUIRED BY THE NEW YORK FACTORY INSPECTION LAW.



theatre, public hall, place of assemblage or place of public resort, and every building in which ten or more persons are employed above the second story in a factory, workshop, or mercantile or other establishment, and every hotel, family hotel, apartment house, boarding-house, lodging-house, or tenement-house in which ten or more persons lodge or reside above the second story, and every factory, workshop, mercantile or other establishment, the owner, lessee, or occupant of which is notified in writing by the inspector hereinafter mentioned that the provisions of this act are applicable thereto, shall be provided with proper ways of egress, or other means of escape from fire, sufficient for the use of all persons accommodated, assembling, employed, lodging or residing in such building; and such ways of egress and means of escape shall be kept free from obstruction, in good repair, and ready for use. Every room above the second story, in any such building in which ten or more persons are employed, shall be provided, if the inspector mentioned in the following section shall so direct in writing, with more than one way of egress by stairways on the inside or outside of the building, placed as near as practicable at opposite ends of such rooms; stairways on the outside of the building shall have suitable railed landings at each story above the first, and shall connect with each story by doors or windows; and such landings, doors, and windows shall be kept clear of ice and snow and other obstructions. Women or children shall not be employed in a factory, workshop, or mercantile or other establishment, in a room above the second story from which there is only one way of egress, if the inspector mentioned in the following section shall so direct in writing. All doors and windows in any building, subject to the provisions of this section, shall open outwardly, if the inspector mentioned in the following section shall so direct in writing. No portable seats shall be allowed in the aisles or passage-ways of such building during any service or entertainment held therein. The proscenium or curtain opening of all theatres shall have a fire resisting curtain of some incombustible material, and such curtain shall be properly constructed and shall be operated by proper mechanism; the certificate of the inspector mentioned in the following section shall be conclusive evidence of a compliance with such requirements.

SEC. 2. It shall be the duty of such inspectors of factories and public buildings, as may be assigned to such duty by the chief of the district police force, to examine, as soon as may be after the passage of this act, and thereafter, from time to time, all buildings within his district subject to the provisions of this act, and it shall be the duty of the inspector of buildings of the city of Boston so to examine all such buildings within said city. In case any such building conforms, in the judgment of such inspector, to the requirements of this act, he shall issue to the owner, lessee, or occupant of such building, or of any portion thereof used as above mentioned in section one, a certificate to that effect, specifying the number of persons for whom the ways of egress or means of escape from fire are deemed to be sufficient. Such certificate shall be conclusive evidence, as long as it continues in force, of a compliance on the part of the person to whom it is issued with the provisions of this act. But such certificate shall be of no effect in case a greater number of persons than therein specified are accommodated or employed, or assemble, lodge or reside within such building or portion thereof, or in case such building is used for any purposes materially different from those for which it was used at the time of the granting thereof, or in case the internal arrangements of such building are materially altered, or in case any ways of egress or means of escape from fire existing in such building at the time of such granting are stopped up, rendered unavailable or materially changed; and in no case shall such certificate continue in force for more than five years from its date. Such certificate may be revoked by such inspector at any time upon written notice to the person holding the same or occupying the premises for which it was granted, and shall be so revoked whenever, in his opinion, any conditions or circumstances have so changed that the existing ways of egress and means of escape are no longer proper and sufficient. A copy of the said certificate shall be kept posted in a conspicuous place upon every floor of such building by the person occupying the premises covered thereby.

SEC. 3. Upon an application being made to an inspector for the granting of a certificate under this act, he shall issue to the person making the same an acknowledgment that such certificate has been applied for, and pending the granting or refusal of such certificate such acknowledgment shall have for the period of ninety days the same effect as such certificate, and such acknowledgment may be renewed by such inspector with the same effect for a further period not exceeding ninety days, and may be further renewed by the Chief of the District Police, until such time as such certificate shall be granted or refused.

SEC. 4. In case any change is made in any premises for which a certificate has been issued under this act, whether in the use thereof or otherwise, such as terminates the effect of such certificate, as above provided in section two, it shall be the duty of the person making the same to give written notice thereof forthwith to the inspector for the district, or Chief of District Police, if such premises are outside of the City of Boston, or to the Inspector of Buildings of the City of Boston, if within said city.

SEC. 5. In case any building or portion thereof, subject to the provisions of this act, is found by an inspector to fail to conform thereto, or in case any change is made in such building or portion thereof, such as terminates the effect of a certificate formerly granted therefor as aforesaid, it shall be the duty of such inspector to give notice in writing to the owner, lessee, or occupant of such building, specifying and describing what additional ways of egress or means of escape from fire are necessary in the opinion of such inspector in order to conform to the provisions of this act, and to secure the granting of a certificate as aforesaid. Notice to any agent of such owner, lessee, or occupant in charge of the premises shall be sufficient notice under this section to such owner, lessee, or occupant.

SEC. 6. In case any building, subject to the provisions of this act, is owned, leased, or occupied, jointly or in severalty, by different persons, any one of such persons shall have the right to apply to any part of the outside of such building, and to sustain from any part of the outside wall thereof, any way of egress or means of escape from fire specified and described by an inspector as above provided, notwithstanding the objection of any such owner, lessee, or occupant; and any way of egress or means of escape may project over the highway.

SEC. 7. When a license is required by law or municipal ordinance, in order to authorize any premises to be used for any purpose mentioned in section one, no license for such purpose shall be granted until a certificate for such building or portion thereof shall first have been obtained from an inspector as above provided, and no such license hereafter issued shall continue in force any longer than such certificate remains in force.

SEC. 8. No wooden flue or air duct for heating or ventilating purposes shall hereafter be placed in any building subject to the provisions of section one of this act, and no pipe for conveying hot air or steam in such building shall be placed or shall remain placed nearer than one inch to any woodwork unless protected, to the satisfaction of the said inspector, by suitable guards or casings of incombustible material.

SEC. 9. Every story above the second of a building, subject to the provisions of section one, shall be supplied with means of extinguishing fire, consisting either of pails of water or other portable apparatus, or of hose attached to a suitable water supply and capable of reaching any part of such story, and such means of extinguishing fire shall be kept at all times ready for use and in good condition.

SEC. 10. It shall be the duty of such members of the inspection department of the district police force, as may be assigned to such duty by the chief of such force, to enforce the provisions of this act outside of the city of Boston, and of the inspector of buildings of the city of Boston to enforce the same within said city, and for such purposes such inspectors shall have the right of access to all parts of any buildings subject to the provisions of this act.

SEC. 11. Cities may, by ordinance, provide that the provisions of this act shall apply to any buildings three or more stories in height within their respective limits.



SEC. 12. It shall be the duty of every owner, lessee, or occupant of any building or part thereof, subject to this act, to cause the provisions thereof to be carried out, and any owner, lessee, or occupant failing to observe such provisions shall be subject to a fine of not less than fifty nor more than one thousand dollars; but no prosecution therefor shall be brought until four weeks after written notice from an inspector, as above provided, of the changes necessary to be made in order to conform thereto, nor then, if, in the meantime, such changes have been made in accordance with such notification. Notice to one member of a firm, or to the clerk or treasurer of a corporation, or to the person in charge of the premises, shall be deemed sufficient notice thereunder, and such notice may be given in person or by mail. Any such owner, lessee, or occupant shall be liable for all damages caused by his violation of the provisions of this act. Any person using or occupying a building, contrary to the provisions of this act, may be enjoined from such use or occupation in a proceeding to be had before the superior court or the supreme judicial court at the instance of the inspector, and upon the filing of a petition therefor any judge or justice of the court in which such proceeding is pending may issue a temporary injunction or restraining order, as provided in proceedings in equity.

SEC. 13. The governor of the Commonwealth is hereby authorized to appoint, from time to time, as may be necessary, not exceeding ten additional members of the inspection department of the district police force, qualified to perform the duties of the members of such department.

SECS. 14 and 15 repeal previous laws and fix the time for causing the act to take effect.

An examination of section 10 of the New York and section 1 of the Massachusetts laws above quoted shows that the metallic stairway, previously recommended in this report, is the only external fire-escape recognized by the laws of those states. Such stairways, by those laws, are made compulsory in many cases where the Minnesota code does not even require a fire ladder. Those laws and similar statutes adopted by other states in recent years simply recognize what fire marshals and factory inspectors have been telling the world for a number of years. They describe the only reliable external fire-escape that has ever been devised. They require such escapes to be constructed in sufficient numbers upon all buildings not otherwise made safe to their inmates from fire. The New York statute gives a good working description of such an escape. That description has already been quoted, and in Fig. 1 has been shown the appearance of a building provided with such a stairway.

The statutes of the states referred to, as do those of many others, contain reference to a number of other subjects concerning which the Minnesota code is silent. Among the regulations thus commended by the law-makers of other states and neglected hitherto by the legislators of Minnesota are those concerning

#### INTERNAL STAIRWAYS.

Earlier legislation relating to fire everywhere laid the stress as we find it in the Minnesota code upon providing some external fire escape. All such escapes, however designed, tend to make a building look unsightly. They are makeshifts at the best. Wherever possible they should be dispensed with altogether. The attention of architects, builders, and owners



should be directed primarily to the inside of the structures to be erected by them or under their control. Every possible motive should be appealed to by the law makers to induce capitalists so to arrange their buildings as to dispense, as far as possible, with the necessity for outside stairways. The stress of the law should consist in demanding of the owners of buildings that the structures under their control be provided with a sufficient number of suitable stairways so arranged as to provide for the safety of those who are to occupy the said structure. A brief review of the different methods of arranging the stairways on the inside of buildings may not be here out of place.

Some tall structures, like the old Tribune building of Minneapolis, are made of combustible materials and provided with but one stairway. That stairway is constructed of wood and arranged around a small light well or elevator shaft. If a fire occurs this stairway becomes a chimney giving a powerful draft, fanning the flames and cutting off all possibility of escape. Such a building can be rendered safe to its human inmates only by the erection of at least two external stairways. Many of such buildings are so badly arranged within that safety can be secured only by the construction of a half dozen or even more of such external stairways. This involves an expenditure of considerable sums of money and gives to such buildings an unsightly appearance. Such outlays are avoided and other desirable ends secured by capitalists who erect buildings with interior arrangements providing for human safety. The interests of humanity do not antagonize capital, but rather coincide therewith. The best provisions for human safety on the interior of structures of any kind are always such as decrease the risk of property by fire. They are the arrangements that lessen fire insurance premiums, and thus add to the balance on the right side of the owner's ledger.

All tall buildings should have two or more interior stairways so arranged as that every room in said buildings above the the first floor should have ready access to at least two of those stairways. In all such structures, wherein many persons congregate above the second story, the stairways should be constructed of fireproof materials as should every thing near them. Then for factories and workshops stairways, as in the great textile manufacturing establishments of Philadelphia and many other cities, should be enclosed by fireproof walls and separated entirely from the rest of the building. The safest and thus the best arrangement of such stairways is the one devised by Mr. Henry Dorn, ex-Chief Factory Inspector of Ohio. It was approved by the National Convention of Factory Inspectors in 1888. The construction of Dorn's fireproof stairway or fire-escape is shown in figures two and three. Figure two shows a ground floor plan of a building provided with two of such stairways in opposite corners. Figure three exhibits the exterior view of the building with the balconies of one of those stairways.

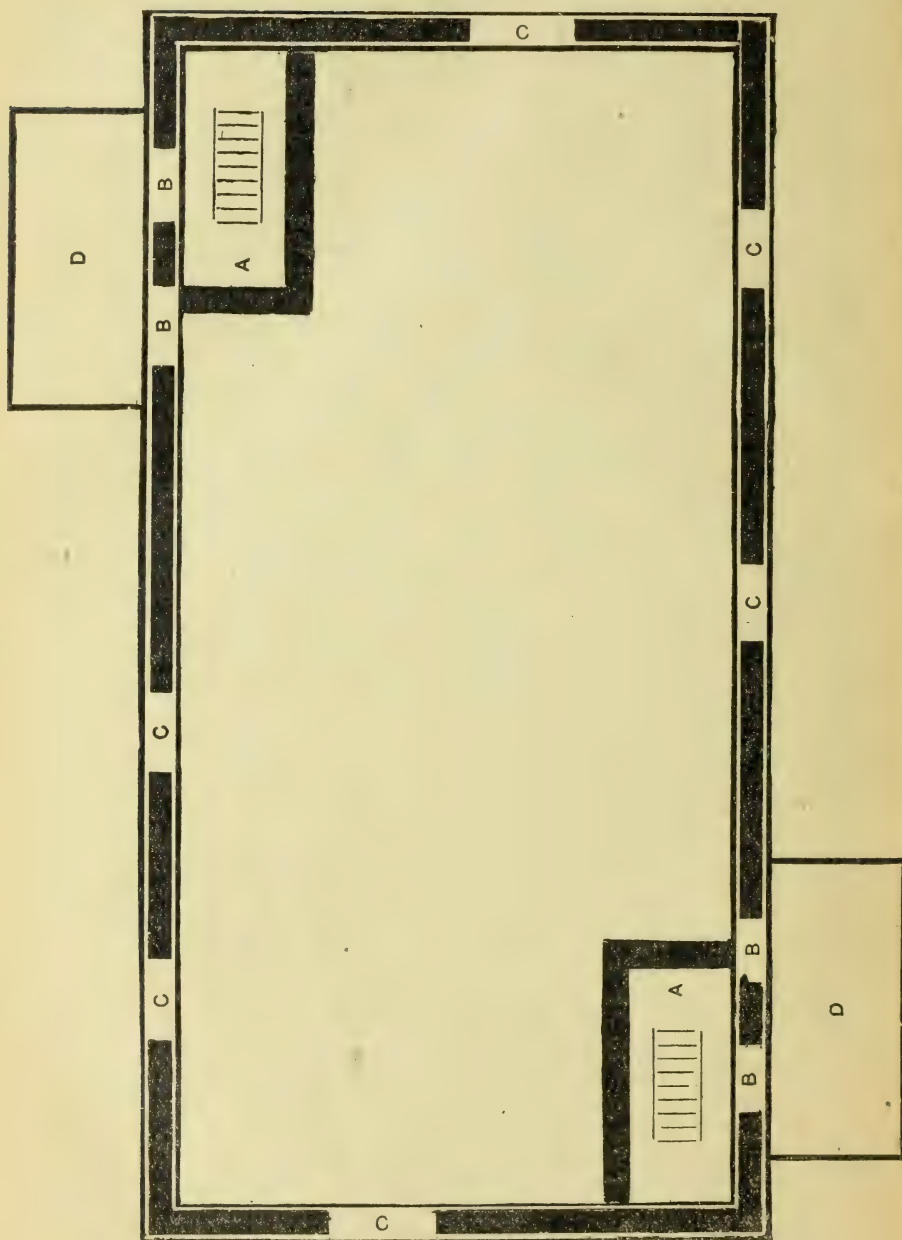


FIGURE 2, DORN'S FIREPROOF STAIRWAY, FLOOR PLAN.



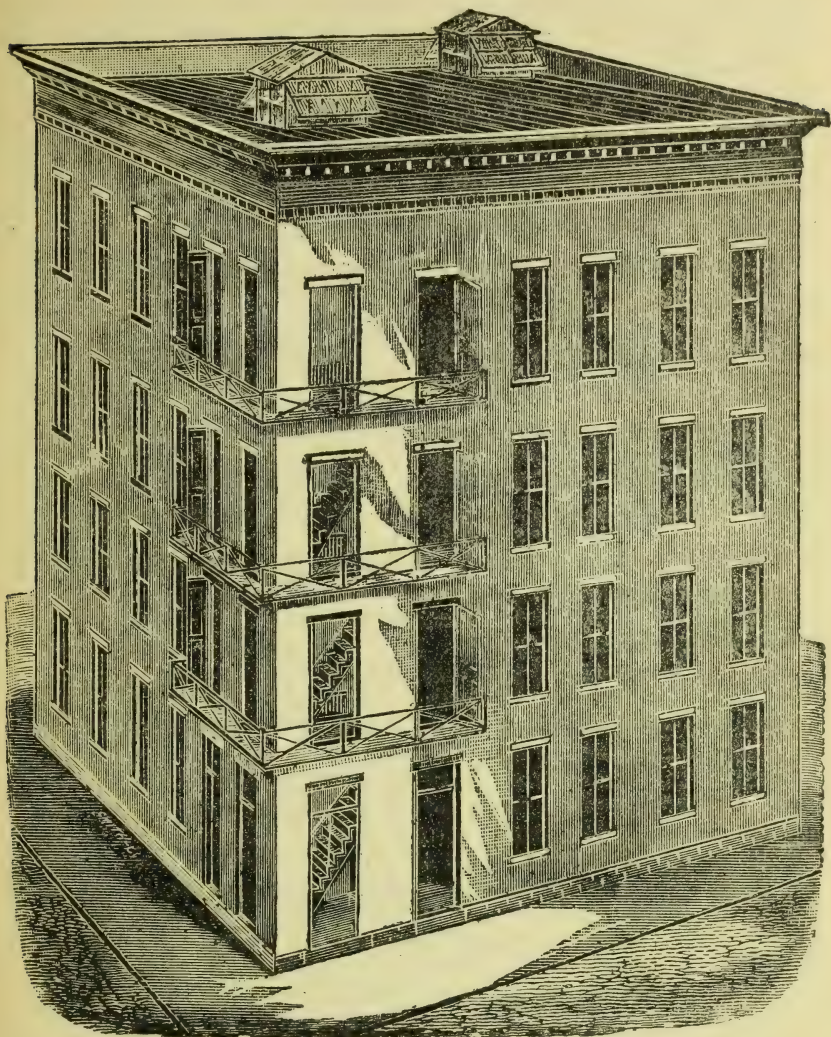


FIG. 3. DORN'S FIREPROOF STAIRWAY, EXTERIOR APPEARANCE.

This stairway has been by many good judges pronounced the best, simplest, cheapest, and only safe fire-escape ever presented to the public. It is described by its designer as follows:

"It is an ordinary stairway built exclusively from iron, two of which are required in a building, located so that they are in an opposite direction to each other. They are enclosed with a brick wall, twelve inches in thickness, which forms a shaft, the same as used for elevators, reaching from the bottom to the top of the building. There is no communication with the stairway from the inside of the building. This is done for the purpose of preventing smoke as well as fire from entering the stairway in case of conflagration. An iron balcony is built on the



outside of the building at each story, a door leading from each floor, the door from the floor opening outwardly, and is constructed along-side of shaft leading into the balcony, where another door is reached, which opens inwardly into the shaft. The doors on each floor open against the adjoining windows, so that a person trying to reach the balcony is not exposed to the flames, should the draft carry the same in that direction. In case of fire not a particle of smoke can get into the stairway, and escape is made easy, even if the entire building be on fire, on account of having all communication with the stairway on the outside.

This escape obviates a serious objection made to all others, viz., the fear individuals have of descending them, especially from very high buildings.

The openings of the doors outward and inward are so constructed that in case of emergency they cannot be blockaded, as is very often the case in serious conflagrations.

The shaft is lighted by making the doors entering the same half-glass panels, and the top of the shaft is also provided with a sky-light which furnishes sufficient light to make the stairways as well lighted and ventilated as possible."

As a further protection against fire, the law of 1883 should be amended requiring all stairways in buildings coming under its specifications to be provided with rails and at all times kept clear of obstructions. In factories, where female operatives are employed, stairs should be properly screened at the sides and bottoms. Doors leading in and to factories should be so constructed, when practicable, as to open outwardly, and they should never be allowed to be bolted, locked, or fastened during working hours.

Much of the value of good building laws, as of other legislation for the protection of human lives, depends on the character of and the powers by law conferred upon the Factory and Building Inspectors whose business it is to enforce the provisions of the same. As has been previously mentioned buildings, as at present erected, exhibit wide diversity of forethought in their construction and in their adaptation to securing the safety of human lives within their walls. Laws must be framed to recognize this fundamental difference in the character of buildings. This can be done only by giving large discretionary power to the inspector or other officer whose duty it is to enforce the regulations established. The Minnesota law of 1883 vests some discretionary power with certain officials in the case of a few buildings such as theatres and the like. In the laws of New York, Massachusetts, and other progressive states, this discretionary power extends to all buildings and is otherwise enlarged. This feature of recent legislation, for the protection of human life, makes it necessary to have honest and competent men in office. But with such persons set to enforce their provisions these laws can be made to guard the lives of all, and with no hardships or unnecessary expense to the men who have constructed their buildings in a proper manner. In amending the law of 1883 it is therefore suggested that the discretionary power of the proper officers should be enlarged and the requirements relating to stairways and fire-escapes made to conform substantially to those established by the laws of New York and Massachusetts.

A subject that in this connection is everywhere attracting the attention of legislators as well as that of fire insurance officers, architects, and builders is that relating to

#### HATCHWAYS, HOISTWAYS, AND ELEVATORS

and floor openings of all kinds in buildings. Elevators in recent years have become a most important factor in all large buildings. They thus have become a subject of momentous interest and will justify a lengthy consideration here. Legislation relating to their construction and use is greatly needed in this State, and it should be framed to conform to the necessities of the subject and the ends which should be sought to be accomplished. Laws relating to elevators must seek one of two ends. They are first to strive to lessen the danger from fire to the regular occupants of the building in which the elevators are situated. And secondly, laws should aim to throw all possible safeguards about the lives of those who are carried up and down by these labor saving devices of the modern world. Without guards elevators in wood buildings, as do all hoistways and well-holes, become dangerous flues when a fire occurs in such a building. They thus add enormously to the danger to property and also to human life. The only guards that lessen this danger are automatic trap-doors, and the isolation of the elevator in shafts constructed of non-combustible materials. They should be used, each where and when the same is practicable. When buildings are being erected or remodeled for manufacturing purposes, local building inspectors should be authorized to require in such buildings the construction of a brick or stone elevator shaft in all buildings constructed of those materials. Automatic trap-doors should be used in all factories when the same are practicable. The adoption of these two features in factories would prove of great value in lessening the danger to life and also to property. Insurance men recognize the value of these suggestions since they make the rate of insurance less where these safety provisions are found than in like buildings where they are absent. There are a large number of patented systems of automatic trap-

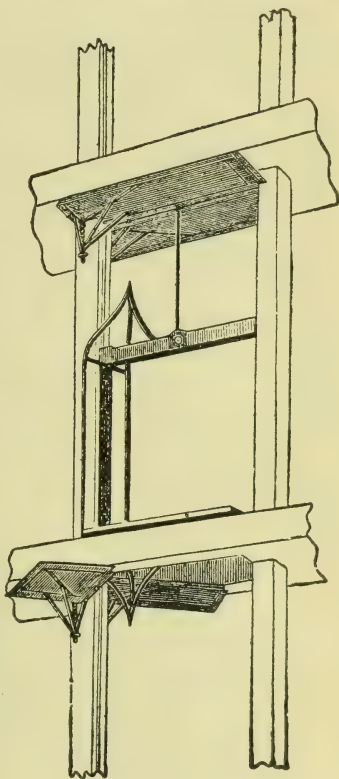


FIG. 4.

inspector should be authorized to require in such buildings the construction of a brick or stone elevator shaft in all buildings constructed of those materials. Automatic trap-doors should be used in all factories when the same are practicable. The adoption of these two features in factories would prove of great value in lessening the danger to life and also to property. Insurance men recognize the value of these suggestions since they make the rate of insurance less where these safety provisions are found than in like buildings where they are absent. There are a large number of patented systems of automatic trap-



doors for elevators. Three different forms of such doors are herewith presented in figures four, five, and six. It is not the design to recommend either one of these doors in preference to any other. They are presented only to show that it is feasible suitably to guard all elevators under the average circumstances with reliable safety devices.

□ Automatic trap-doors, while feasible in connection with most elevators and hoistways in factories, are not, however, practi-

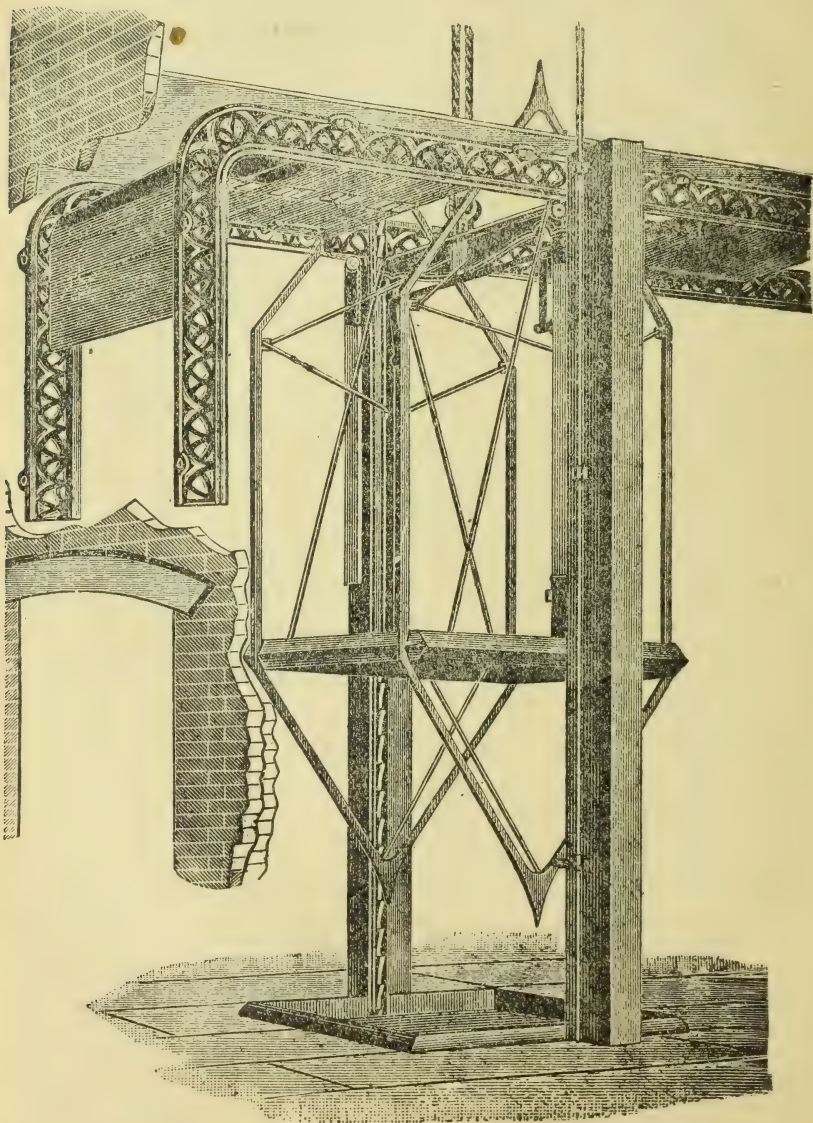


FIGURE 5.



cable in all. Some elevators are to be found in factories to which such trap-doors can not be applied without entirely remodeling them. In such cases upright doors should be provided, and when such elevators are operated in shafts not constructed of brick, those shafts should be encased with a metal-

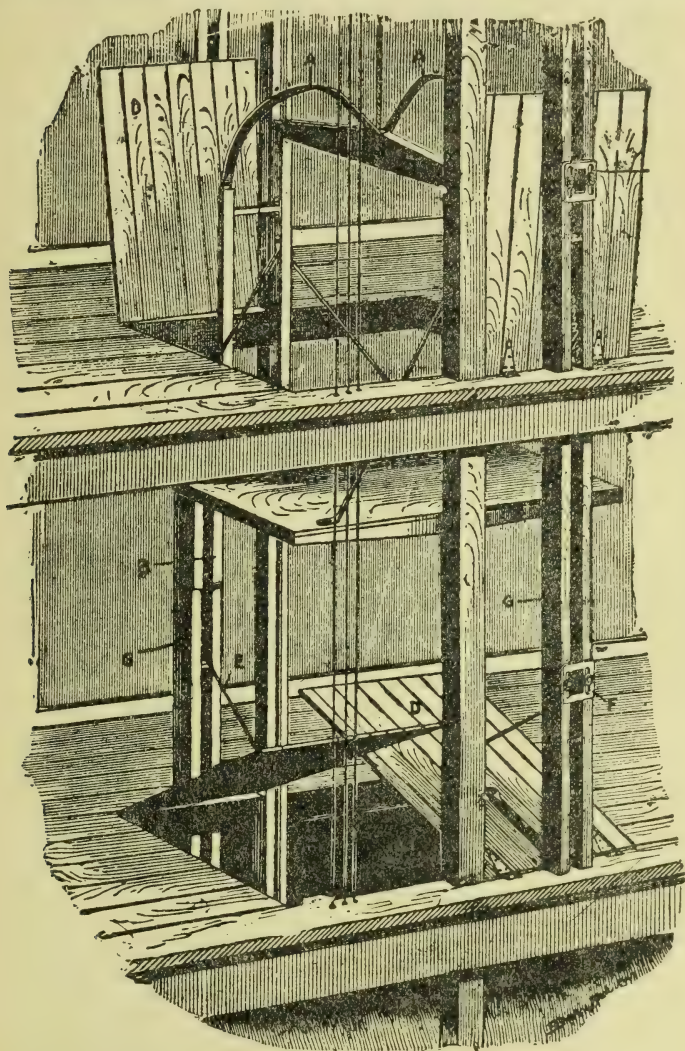


FIGURE 6.

lic covering their entire length. This casing, it is true, is not of much real value in fighting fire beyond giving the operatives a little more time in which to escape from a burning building. Where these upright doors are provided they should be kept closed at all times when not in use. Here it is well to note the

real objection to such doors. Unlike the trap-door, the upright door can easily be fastened back. This is often done. Several accidents have occurred in this State in the past two years from this cause. Employes moved by all sorts of whims and caprices are tempted to set aside the provisions which their employers have made for the safety of themselves and of their fellows. It is in this way that the upright door of elevators are fastened back so frequently and so many serious and fatal accidents occur. The automatic trap-door, when practicable, prevents this danger as well as lessens the risk of fire.

Well-holes and all openings that can not be closed by trap-doors should be guarded by a strong rail, fence, or similar protection. These rails, which are all the guard applicable in the case of large well-holes, are not a desirable guard for elevators. To be sure, many elevators are to be found which are protected by these rails or automatic gates or bars. But few can be found who have given attention to the subject that consider these, when used alone, sufficient or proper guards. The Chief of the New York Factory Inspectors says of them: "They do very well as an additional security where automatic trap-doors are in operation, but in case of fire they offer no obstacle to its spreading and consequently are of no value."

In factories but one objection has been offered to the use of automatic trap-doors. Some factory owners have said, and said truly: "We can not run elevators swiftly with automatic trap-doors without adding to the danger to life and limb for those borne up and down in their cars." This objection involves a consideration of the second class of danger resulting from the use of elevators, a danger already referred to. If, in factories, elevators can not be run at a high rate of speed, and at the same time permit the use of safety devices of such recognized merit as automatic trap-doors, then every consideration of public safety is an argument against such rate of speed. There are reasons for high speed for elevators in tall fire-proof office buildings. The fire-proofing in those structures does away with any necessity for the trap-doors. But reasoning based upon the conditions and necessities of these first-class structures should not be permitted to fix the rule for highly combustible factories and office buildings which are in reality fire traps for their inmates.

Further, all elevators should be provided with double cables and automatic safety catches, so that if one of the cables break or any other accident happens to the machinery the car will not be precipitated to the bottom of the shaft. Then for factories and storehouses all elevators should have lock attachments which will fasten the car at whatever floor it may be in use. This would prevent a large number of accidents of which the following is a typical specimen. An operator goes to a floor, and leaves his car upon some errand. Some other person, upon some other floor, desiring the elevator, moves it up or down. The first operator having discharged his errand returns to the



shaft. He opens the door and steps upon what he supposes is the floor of the car. Instead he is plunged to the bottom below with serious if not fatal results.

In this connection the recommendation is offered which has been previously made relating to the regulations concerning stairways and fire-escapes. Large discretionary power should be given to the inspector or other official whose duty it shall be to enforce the provisions of any law to be enacted for the regulation of elevators. It should rest with him to say when automatic trap-doors are practicable in factories. He should also have power, under suitable and proper restrictions, to accept or reject any so-called safety attachment or device used in connection with elevators, and to condemn all elevators that in his judgment are unsafe. He should have the power of prohibiting the employment of persons of immature years for the purpose of managing elevators, and should determine the age and other qualifications to be required of all who are placed in charge of the same.

The inspector authorized to do this work should be a practical mechanic who has had experience in manufacturing and operating such appliances. His rules for the regulation of elevators, the qualification of operators, etc., above referred to, should be arranged and promulgated subject to restrictions similar to those now governing the rules of the Minnesota boiler inspectors.

Loss of life from fire is only occasional. Several years may elapse before another person may be sacrificed in flame in Minnesota as the result of improperly constructed stairways, insufficient fire-escapes, or non-protected elevators. Quite a number are hurt each year by unguarded elevators. Hence, as has been shown in this report, there is great need of legislation providing additional safeguards and wise regulations concerning these provisions of our factories and other buildings. But while it may be ten or more years before another life is lost by fire in Minnesota, it is absolutely certain that in our commonwealth several lives will be sacrificed and many persons permanently crippled in each one of those years by

#### DEFECTIVE AND UNGUARDED MACHINERY.

There is at present no law upon our statute books seeking to lessen this mortality and decrease this long list of yearly accidents, with the exception of the law "Establishing a board of inspectors to inspect steam vessels and steam boilers, etc." A large percentage of the accidents now occurring in factories and workshops are preventable. At least that is the conclusion to which this Bureau has come as the result of its investigation of the factories of the State and of the practicable known means of guarding against accidents. Many an incident has come to the attention of the Bureau similar to the following: In a certain saw-mill in the State, within the past two years, a large driving wheel burst because it was defective. Its pieces



flew in all directions and barely missed killing a number of the workmen. A similar wheel, in the same establishment, was known to be cracked. After this accident the attention of the owner of the mill was called to this second defective wheel, and he was requested to replace it with a sound one. He said he would not. The men told him that the wheel might any day burst and kill or maim several of their number. The owner answered: You can quit if you fear the danger. I do not compel any of you to continue to work for me. You are free to do as you will and I claim the same right of running my establishment. The workmen appealed to this Bureau and requested that the master be compelled to remove the defective pulley and replace it with a sound one. The Bureau was powerless to effect a change. Many other factories have been found with defective machinery, much of which, however, has been changed at the suggestion of the inspector of this Bureau. A general law relating to factories and workshops should be enacted giving some officer of the State authority to compel changes in all such cases. To begin with, it is suggested that such a law should contain a clause substantially as follows: No grindstone, emery wheel, saw, drum, gearing, pulley, fly-wheel, or machine shall be used in any factory or workshop when the same or any essential portion thereof is known to be cracked or otherwise so defective as to endanger the life or limbs of workmen or others in the establishment.

No workman should be compelled to toil in any place where there is a defective or unguarded piece of machinery. The employer reasons falsely when, as in the case just cited, he says of his men: "They are free to work or quit. I do not compel any one to work with machinery cracked or defective from any other cause. I am and should be free to keep my mill as it is or make changes to suit my fancy. The men are free to stay or go. I am master of the mill and they of their labor." The foregoing is not a fair statement of the situation. The fact is the average wage worker is not, as a rule, free to do as he would choose. At least he is not as free as his master. The workmen would prefer to toil where there is no danger. But so often he faces the alternative of work with danger or idleness for a long season and consequent suffering for himself and family. His personal necessities and the pressing claims of loved ones thus frequently constrain the poor man to assume a risk which he would fain avoid. These necessities and claims, for the time being, take away his perfect freedom of choice, and it can truthfully be said "he is not as free to go or stay as is the master to make his machinery safer or neglect his duty concerning the same." That duty of the employer is to remove from the labors of his workmen all danger and risk that by any reasonable care, foresight, and expense is avoidable. The State, by law, should compel all employers thus to lessen the dangerous character of the toil of their employes.

The location of machinery often greatly modifies the danger

connected therewith. This is especially the case with apparatus such as shafting, belting, etc., for conveying power. In well constructed factories, as a rule, most of this machinery mentioned above is located beneath the floors or so near the ceiling, or is otherwise so arranged as not to be dangerous. In badly arranged establishments no attention to this question of safety has been given when locating shafting and arranging the other machinery and attachments of the same. The workmen and even strangers visiting such factories and mills are thus exposed to great and constant danger. The same condition prevails in a few mills where the machinery operated is of such a nature that shafting, belting, etc., can not be so located as to free the occupants of the mill from danger. Safety to workmen, under these two latter conditions, can be secured only by the use of some form of guards. The recommendation is therefore made that by law factory owners be compelled to so locate all shafting, wheels, fly-wheels, pulleys, cogs, gearing, cables, and belting of every description as not to be dangerous to workmen, or securely to guard, fence, or otherwise protect the same in such manner as may be required by the inspector whose duty it is to enforce the provisions of the same.

Dangerous places always have and probably always will continue to exist about factories and workshops. Well-holes are created in large buildings to furnish light for the lower stories. A thousand local and temporary exigencies give rise to dangerous places in or near to factories, workshops, and other localities where large numbers of work people are employed. It is recommended that by law it shall be compulsory to securely fence, enclose, or otherwise protect all such light-wells and all other dangerous places.

#### LOOSE PULLEYS AND BELT-SHIFTERS

have been in use in the best of factories and machine shops for many years. During that time they have demonstrated their value both from the humanitarian and the economical standpoint. Their use decreases the number of accidents and saves the time of the workmen. When loose pulleys are provided it is always an easy and simple thing to provide stationary belt-shifters. They obviate the dangerous expedient of shifting a belt with a stick or by the more hazardous method of doing it with the hand. Shops, where loose pulleys are used in all available places and stationary belt-shifters are also employed, involve their owners in fewer costly and vexatious law suits than fall to the lot of the manufacturers whose establishments are not thus fitted with these devices. Protection in guarding machinery is always a matter of detail. General rules should be prescribed by law, and yet much must be left to the intelligence, care, and good judgment of the inspector and the factory owner. In no class of work is this truer than in protecting against loss of life by



## SET-SCREWS.

These are a fruitful cause of disaster to humanity. Hundreds of lives have been sacrificed through their instrumentality. A projecting set-screw near a hanger, journal or pulley which needs occasional oiling and which must be reached by a stool or step ladder, oft catches the clothes of the oiler, and he is hurled about and mangled in all sorts of fearful ways. The danger is greater when the set-screw is near the floor. Sometimes an inexperienced person, looking at such set screws, says that an accident by them is impossible. Many times employers telling the inspector about some accident that befell a workman from one of these set-screws has asked: "Don't you think the man must have been criminally careless to have been thus caught?" The frequency with which these accidents occur should satisfy all men that these accidents are due to something besides the carelessness of the injured, and that it is very possible to get hurt by reason of these simple looking pieces of iron.

If designers of machinery in America were awake to the subject, as they are in England, the question of guarding set-screws would not need attract the attention or space which it now does at the hand of every factory inspector. The average factory owner takes his machinery of every kind just as it leaves the works of its maker. Ordinarily, he never examines it with a view of ascertaining whether it is properly guarded. He takes that for granted or he never thinks of it. Because he does not think of this subject when purchasing machines, he is often made defendant in costly suits for damages; suits which might have been avoided had the manufacturer of machines given the subject of guards any attention. In this State a man who manufactures step-ladders was recently made to pay heavy damages to one who had been hurt as the result of a ladder improperly constructed. Now, if makers of step-ladders are to be held to this degree of responsibility, and there is no reason why they should not, is it unjust to hold makers of machines liable for the damages which follow their neglect to provide proper and sufficient safeguards for all parts of their workmanship? In no connection does this question seem so pertinent as in the case of collars held in place by set-screws. These collars can usually be readily made heavy enough to allow the head of the set-screw to be completely countersunk. When this is done a complete guard is furnished and the design of the machine is disfigured by no unsightly attachment. The collar needs only to be bored on the outside so as to allow the use of a proper wrench. What is here said about collars applies with equal force to couplings fastened with bolts. These couplings need only be made long enough to admit of having the fastening bolts countersunk at both ends.

If a factory owner, after being compelled to pay heavy damages to a workman injured by one of these set-screws left unguarded, should sue the manufacturer of the machine on



which the set-screw is found, and the court should apply the principle of responsibility made use of in the case of the maker of step-ladders, the machine makers of the land, by the result-

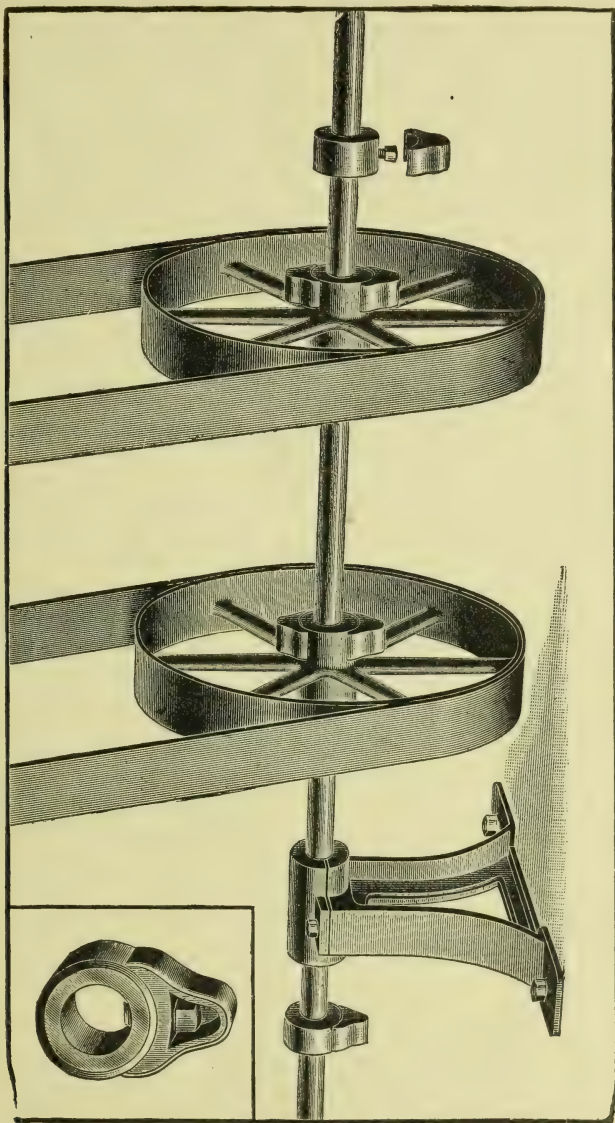


FIGURE 7.

ing judgment, would be aroused to an appreciation of their duty in the premises. They would set about providing all machines going out of their shop with suitable guards. This is the primary need for the protection of human life. We

should have machinery made right in the first place and not doctored and tinkered with cheap or dear makeshifts afterwards. A few decisions of the courts holding men responsible for defects of unguarded apparatus constructed by them would be the most effective measure possible. The next best method is that followed in Great Britain. No large factory is allowed to use a new machine until it has been examined and approved by the factory inspector of the district. Knowing that all his work must thus be subject to this examination, the maker of machinery, shafting, etc., in Great Britain gives great attention to this question of guarding it in all its parts. A specimen of the perfect guards that thus result can be seen in the British made machinery now in use in the linen mill in Minneapolis. There are in such machinery no unguarded set-screws. The manufacturer of machinery can best secure against accidents by such screws.

If, however, the machine manufacturer has not so guarded his work there are left to the factory owner a number of resources for his protection and for the safety of his employes. There is first, for most factories, a patent set-screw protector made of rubber and shown in Figure 7.

This protector is very light and is applied by placing the same over the head of the screw, pressing down and turning the protector around. This will cause the hole in the protector to expand. After it is over the head of the set-screw it will contract and remain thereafter in the position in which it is placed. It can, however, be readily removed at any time when it is necessary to unfasten the collar held in place by the screw. These protectors cost but a few cents, require but a minute to apply, and will prevent all accidents that are liable to occur in connection with set-screws.

In saw-mills and kindred wood working establishments, of which we have many in Minnesota, set-screws are usually found in connection with long lines of shafting which are situated near to the timbers of the building. Such set screws can be fully protected by nailing a piece of tin or sheet iron to the timber and bending it in a circular form over the set-screw. This makes the best possible guard and involves but little labor and a trifling expense.

#### PLANERS AND SAWS.

In another chapter will be found a list of such accidents in the factories of Minnesota as have come to the attention of the Bureau in the past year. A glance at the same will show that the larger proportion of those accidents happened in connection with the operation of wood working machinery. No one, however, was injured on a horizontal or common surface planer for planing the surface of boards. But at the time when such planing machines were first introduced and for a number of years they were a prolific source of frightful and fatal acci-

dents. As first made the cylinder bearing the knives was uncovered and totally unprovided with guards. The great possibility of serious accidents and the need of providing a way of carrying off the shavings soon led to the devising and application of a perfect guard. The public saw the real danger of the machine and called for guards, and the makers of machines set themselves to meet the popular demand. This fact, in the history of one wood working machine, is cited to show that so soon as guarded machines are generally required they will be constructed. The first thing required is a clear apprehension of the danger to be avoided. When that is realized and the public aroused inventive ingenuity will soon overcome all difficulties. This last statement can be illustrated by the devices now being introduced for preventing accidents in the operation of rip-saws.

A half century almost had elapsed from the introduction of these saws before any serious effort was made to guard them. Hundreds of people had been killed and thousands maimed by them, and nothing was done to lessen the ever lengthening list of yearly accidents by rip-saws. The last few years has seen a change. Inventive skill has attacked the problem, and now we have quite a variety of guards more or less successful in preventing the maiming of the operator or any other person who ventures near these labor saving devices of the modern world. Most fatal accidents due to rip-saws are caused by the slipping of the board to the top of the saw. Whenever this happens the board is thrown with frightful velocity back from the saw. Thus thrown, it always kills or seriously hurts any one who chances to be in the pathway of the flying board. A very simple device will prevent all such fatal accidents. It consists of a steel strip, thinner than the saw, fastened in the table at the back of the saw, and extending around over the top toward the front, in the shape of a sickle. This device does not prevent the saw from throwing dust in the eyes of the workman. Neither does it prevent injuries which so frequently happen to the fingers and hands of the operator and the chance passer-by. Employers always like to charge up all accidents on saws to the carelessness of workmen. That carelessness does have a place in such disasters. But when it concerns their pocketbooks and not the lives or limbs of their workmen, these same employers always strive to lessen the possible range of carelessness. For an employer doing all that he can to eliminate the carelessness of employes in other matters, and who has not introduced all safety devices to protect those men from danger, to tell about the carelessness of his men, is to plead the baby act in a very small and mean way. Here, then, is the fact. The employer has a duty to protect the lives and limbs of his workmen as well as his own financial interests from the heedlessness and thoughtlessness of those workmen. The simple device already described will, in almost all cases, guard men from death and most serious injuries on the rip-saw. The



scope of carelessness in producing these lamentable results is practicably eliminated in this connection. Other and better safeguards go farther and fully protect the men from the natural danger of the saw and also from their carelessness. One of these is shown in figure 8.

This guard consists of a polished nickle plate steel blade, "F." This is substantially the same as the device described above and like it is fastened to the table at the back of the saw. To this steel plate "F"

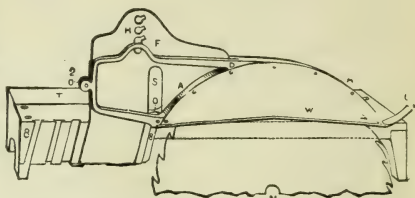


FIGURE 8, GUARD FOR RIP-SAW.

is attached a cover or hood, "A" which encloses all of the saw not used for cutting which appears above the table. Nothing can touch the saw, except under this hood, but any thickness of board can be run through as before, and the work is always in sight.

In Figure 9 is shown a second form of guards for rip-saws. The difference between the two guards consists in details and materials of construction. It is claimed for either of the foregoing guards, which are patented, that they not only prevent all ordinary accidents on saws, but enable the workman to do more work than with the open saws.

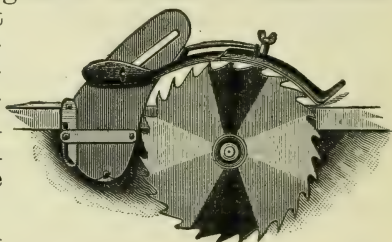


FIGURE 9.

Another guard, which is in use in some factories in Minnesota, and which can be readily made by anyone, consists of a half-circular shaped tin hood suspended from the ceiling over the saw by a board one inch by three. To the bottom of this board is attached another similar piece which can be moved up and down and fastened with a thumb screw, as the thickness of the work in hand requires. This has nearly all the advantages of the two guards last mentioned, except durability, and, like them, prevents the dust from flying in the face of the workman. One advantage of this device is this. It can be attached to cross-cut saws, which cannot be done with the others.

The guards described above for the ordinary circular rip-saw are not necessary or even applicable to the sets of saws in lumber mills for edging boards. These saws do not need any such system of protection since the construction of their frames, etc., guards them perfectly.

Swing saws should always be covered as far down as possible and provided with a balance weight or spring to throw them automatically back from the workman. They should be provided with a stop to prevent them from swinging out beyond the front of the table on which they are operated. All these guards can easily be applied, and at so little expense to the owner that they may be called costless.

Band saws or endless saws should be so protected that the

operator would not be in danger of injury about the head in case the saw broke or slipped from the wheel. This can be done by the use of a short iron guard fastened above the upper pulley. These saws should also be properly guarded beneath to protect the lower part of the operator in case of breakage and to prevent blocks from falling into the wheel to be by it hurled with great velocity and to the serious injury of any one whom they might hit.

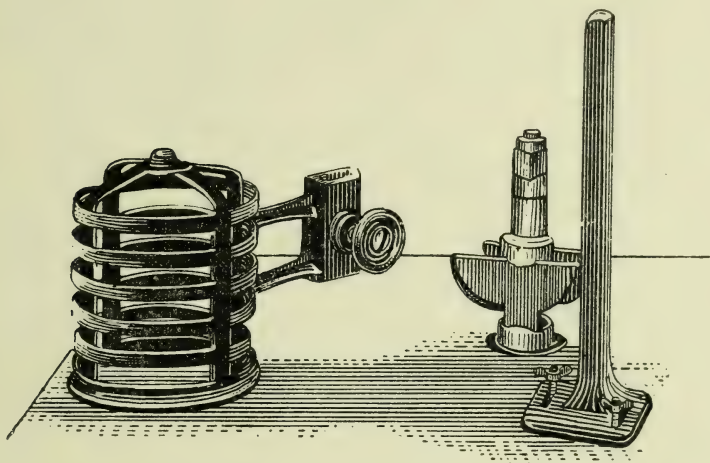


FIGURE 10.

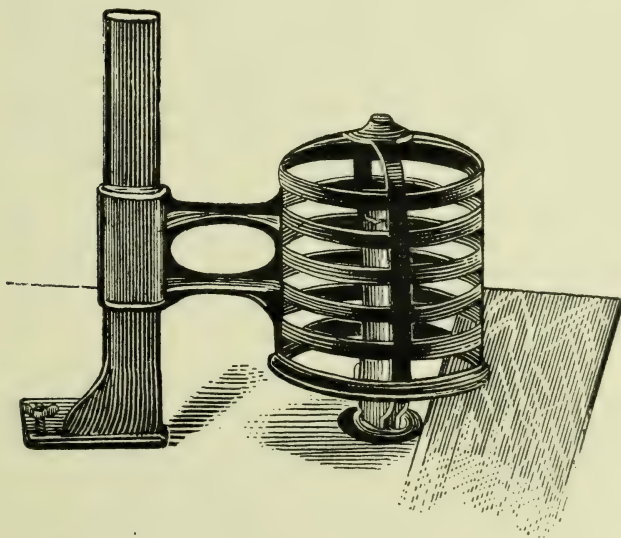


FIGURE 11.

## FRIZZERS OR WOOD SHAPERS,

as upright moulding machines are commonly called, are, at the present time of all wood working apparatus, most productive of that class of accidents which result in loss of fingers and the crippling of hands. An outside guard or hood can be employed in connection with a portion of the work to be done on these machines. Figures ten and eleven, on page 67, present two views of one style of such shaper guards. Figure ten exhibits the method of fastening the standard to the table and also shows the guard separately at one side. Figure eleven gives a view of the guard in position over the cutting instrument as the same is at work.

The foregoing is a patented device. Some manufacturers use a guard of their own make. It consists of a hood made to hang over the cutter, as shown in figure 11, only it is suspended from the ceiling, as was described in the case of one of the rip-saw guards. The hood of this home-made guard is much simpler and hence cheaper than the one shown in the cut. Both of these guards greatly lessen the risk to injury where they are applicable. They are neither perfect guards at all kinds of mouldings and show that the inventors have yet something to do before they have overcome all the difficulties in the way of preventing all accidents in the use of the upright moulding machines. The success of these devices in lessening danger, and that of a half dozen other guards in use in this state, are proof, however, that soon this machine will be mastered and its operation made harmless. These and other devices so lessen danger that all good factory laws require these machines to be guarded as far as the same may be practicable. Of the other methods in use for guarding shapers, the following has been employed by many: A board or plank is bolted to the table just near enough to the work to allow the moulding to be made. This board or plank will, in case a hard or soft spot is met, prevent the wood from being drawn in by the cutter and thereby prevents the operator from being injured.

The Hon. Wm. Z. McDonald, Chief Factory Inspector of Ohio, in his excellent report of 1889, in speaking concerning the danger of some few machines and the best way of guarding them, thus refers to

## JOINTERS.

"The jointer is known to be the most dangerous piece of wood-working machinery in existence, and will be found in almost every wood-working establishment. This machine has caused more accidents and maimed more men for life than all the other machinery spoken of under that head. It is a valuable and almost indispensable piece of machinery, yet it has long been looked upon with horror by mechanics on account of its dangerous character. I have followed up, as closely as possible, the causes of accidents on this machine, and, in almost every case, find that the operator's hand, in some unaccountable manner, has slipped from the work or has been thrown into the knives and almost invariably at the side of the work. This could be prevented by keeping the cage as close to the near



edge of the knives as possible, only exposing the same width of the knives, as the surface of the stuff being worked is wide; but to do this would be impracticable, because they would always be using one end of the knives, and could not keep them sharp nor straight, both being essential to good work. That mechanic does not exist who would not place his limbs in jeopardy, if it were necessary, to do good work, and it certainly would be under such practice. There is a practicable and equally simple way of guarding against accident from this machine, which is by providing a cover, adjustable to the surface plate or top of bed, covering the unnecessary exposure of the knives, thus only allowing enough space exposed between the cover and the cage to allow the material being worked to pass through. Too much in favor of this method can not be said, and it will undoubtedly prevent accident. I have yet the first mechanic to meet who does not praise this device for protection, especially so after having it in operation for a time."

The same excellent authority says, in speaking of

#### SAND-PAPER OR WOOD-POLISHING MACHINES.

"These machines furnish an excellent cause for accident by getting the hand between the rolls. Numerous accidents have occurred in this (Ohio) and other states from this source, and some of a very serious nature. The machine is so constructed in its gearing that, after the belts have been thrown off of the tight pulleys, the machine will continue in motion two minutes or more, and, in case a person should get his hand caught between the rolls, the result is sure to be the loss of the hand or arm, and in all probability a life. We guard against such accidents by providing what we call a safety strip or bar, constructed of metal, placed in front of the top-front feed roll, so adjusted that the strip will move with the roll, and that the bottom of the strip will be a little above the bottom of the top roll, thus allowing stuff to be fed between the rolls without any interference, and at the same time prevent the operative's hands coming in contact with the rolls. This mode of protection has prevented many serious accidents, and meets with the approval of all who have adopted it. I would say further that this safety strip or bar can be successfully used on all feed roller machinery where danger referred to above is apt to occur, such as on short wood-planers, corrugating rolls in wash board factories, etc."

#### IRONING MANGLES,

as the system of hot rolls for ironing clothes in all modern laundries are called, are very dangerous machines. Quite a number of accidents have occurred in Minnesota during the past few years in connection with their use. Their operators are usually women or children. The accidents usually consist of having the hand caught by the feed rolls and drawn in between the hot rolls of the machines. This not only crushes the hand and arm, tearing it in some instances from the body, but burns the flesh. Many a girl, dependent upon her labor for the support of herself and others, annually thus loses her arm and occasionally her life.

One method of preventing these sad accidents is that suggested by Chief Factory Inspector McDonald, of Ohio. It is the one just described in connection with the sand-papering machine. An iron strip or bar is placed just in front of the upper feed roll. This does not impede the work but does prevent the hand of the operator from being caught. Some mangles are made in such a manner as to greatly lessen the danger of serious accident. Their construction is such that they will not draw any object through between the rollers unless the

foot of the operator is pressed upon a certain lever. This arrangement was devised with the idea that the operator whose hand was caught would involuntarily withdraw her foot and thus free herself from all further danger or harm. These machines seem to answer fairly well to the theory of their inventors and are therefore to be commended. The iron bar suggested to be placed before the upper feed roll should not be dispensed with. No precaution should be omitted in managing such dangerous appliances as they cannot be too well protected, especially where children or young persons are to be employed.

#### VATS, PANS, ETC.

Nowhere are simple guards so effective as in connection with vats, pans, and other structures containing molten metal or hot liquids of any kind. These can be fully protected by the construction of a wood or iron fence or rail preventing people from slipping into them. The general use of such rails or guards should be made compulsory.

#### FLY-WHEELS

can be fully guarded in the same way, and such guards will prevent most of the accidents which happen to the engineer in charge, and to others who may from business or curiosity be led near those wheels. The guard should be so arranged as to enable the engineer to have ready access to the wheel for the purpose of oiling its bearings and discharging his other duties about it. The guard should not, however, be a close fence forcing the engineer to pass inside the same in the performance of his duties. Such fences, it is true, protect the public who may chance to enter the engine room, but they add to the danger of the engineer. It is for his sake even more than for others that guards for fly-wheels should be devised. The only form that will accomplish that end and also protect the public is the one first mentioned, a strong rail about the wheel pit, so arranged as to permit of oiling, etc., and yet preventing the slipping of a person into the wheel.

#### COGS AND GEARING

when exposed are fruitful sources of danger. They should be properly covered; that is, the parts of the wheels where they mash should be covered and so securely guarded that it would be an impossibility for those working at or passing near them to be caught therein. There is no necessity for exposed gearing or cog-wheels, and a covering adds to their durability. Flour mills, of which there are very many in Minnesota, have the largest amount of unguarded gearing of any class of shops in the State. That this is unnecessary is shown by the perfect system of guards for the same in use in the Pillsbury "A" mill of Minneapolis. The Minneapolis Linen Factory has some fine examples of machinery with cogs and gearing all guarded. These two establishments are cited in support of the assertion

that all cogs and gearing can be fully guarded and thus the workmen protected from accidents by the same.

#### EMERY-WHEELS AND GRINDSTONES

are sources of danger to life as well as health. A few severe accidents have occurred in this State during the past year by the bursting of emery-wheels. No accidents with grindstones have come to the knowledge of the Bureau. Doubtless this is due to the simple reason that as yet but few grindstones are here in use under circumstances that lead to bursting. Of the accidents by emery-wheels, the greater number could have been obviated by the observance of a few simple rules. No emery-wheel should be run faster than the schedule rate advertised by the makers. This will generally be found a safe speed to go by, because the maker has his business reputation at stake. Hon. James Connelly, Factory Inspector for New York, suggests that: "The collars holding emery-wheels should be very wide, reaching within an inch at least of the edge. If firmly put on, no emery-wheel can fly off the mandrill with such a pair of collars. The wheel may crack as before, but not with such destructive results. When the wheel is worn down to the iron collar, a smaller set may be put on and the wheel continued in use. A few sets of graduated collars will suffice for each wheel and a great danger will be avoided and at little cost."

Besides the danger from bursting, the operative at the emery-wheel suffers from breathing the dust generated by the same. In former years the health of hundreds of operators has thus been permanently ruined. To prevent that, these wheels should be connected with exhaust fans or other devices which will carry off this dust. This will at once make the occupation of the workman healthier, and will also aid, in some measure, in lessening the danger from bursting wheels. To make a success of these dust fans, they must, however, be applied by one who understands his business. Hence the work should always be given to a competent man.

Grindstones used for dry grinding should be fitted with exhaust fans the same as emery-wheels. Grindstones frequently burst from being out of balance. This is due very often to the very simple fact that one side of the stone has been allowed to remain in water while the other continued dry. This happens when the water to keep them moist is supplied by a trough underneath. The stone is stopped for a day or two and one side remains in the water. It thus becomes heavier, and if the stone is highly speeded it is liable to burst as the result. Care should therefore be taken to have the stones as dry as possible and evenly balanced at all times. The observance of these rules will go far toward lessening accidents from bursting grindstones.

#### DUST CREATING MACHINES.

including polishing machines in shoe factories, fibre machines, in pail and other factories, and many wood-working machines,



should all be provided with exhaust fans or other effective apparatus for removing the dust, the same as has been suggested in the case of emery-wheels and dry grindstones. This is in the interest of the workman's health and of the employer's financial profit. Experience shows that an operator can do more work in a clean, dust free atmosphere than in one laden with all sorts of impurities. The greater portion of dust creating machines are now provided with these exhaust fans or other proper devices for removing impurities from the air. Quite a number of manufacturers have adopted them during the past year at the suggestion of the officers of this Bureau. The results following this adoption have been most gratifying. The law should require the use of these devices by all and compel the few employers to be as humane towards their workmen as the more progressive ones are from an apprehension of their own self-interest.

Communication between the power-house and all working rooms should be provided such that the engineer or other person in charge could at all times be readily signaled to stop the engine or water-wheels in case of any one being caught in the moving machinery.

#### POWER PRESSES AND STAMPING MACHINES

cause very many accidents every year. These machines are usually operated by boys under sixteen years of age. Some imperfect guards have been devised for these machines and are generally introduced in Minnesota. But these guards, although all that human ingenuity has thus far devised for these machines as now constructed, are far from perfect. Many accidents occur even when these guards are employed. In speaking of these accidents, employers credit them to "carelessness." But with so many accidents of an identical kind, happening on the same machine, to different boys, in precisely the same way, a serious question arises, whose "carelessness" is answerable for these deplorable results?

All these machines require a monotonous movement on the part of the operator. He is called upon to do the same thing over and over again. This sameness of motion seems to be contrary to the natural active propensities of the average boy. The child mind is apt to wander. The less it is trained by education the more marked is this tendency. As a result the child frequently turns from its work for transient relief to what to him is amusement, some may call it mischief. The agent of this Bureau has frequently seen children thus playing at their work even while operating or in near proximity to the most dangerous machinery. To be sure all this was in violation of the rules and regulations of the establishment. But this is the nature of children, and hence it should be no surprise that in moments of thoughtlessness the child, operating any dangerous machine, places or leaves his hand in situations where it is more or less seriously injured. Mr. Connelly, Chief Factory Inspector for New York, in speaking of the work of

boys at these stamping machines, says: "No matter whether this (the act of the child causing his hurt) can be called carelessness or not, I maintain that it is criminal to expose any child to such disastrous opportunity to be careless. It might not be so bad if the accident happened only once in a while, but when boy after boy is injured upon the same machine, in exactly the same way, and from the same causes, no sensible man will concede that an employer is justified in continuing to put boys at such hazardous occupations."

Mr. McDonald, Chief Factory Inspector for Ohio, in 1889, says, in speaking of accidents to children by dangerous machinery: "The employers reported the cause of accident, carelessness. Yes, it seems to me and clearly, too, that *carelessness* was the cause of the accident, *extreme carelessness* to employ a child around a dangerous machine whose mind is not sufficiently developed to apprehend the danger of his position and surroundings."

In passing upon the responsibility for injuries to children where the carelessness of the child has been shown, the New York Court of Appeals lays down the following principle: "The law does not require from a boy of thirteen the same mature judgment which it does from a grown person." Other courts of other states and of the general government have given similar rulings. The legislatures of New York, Ohio, and some other states have recognized the justice of these rules and made it a penal offense for any person to employ a child at any dangerous, unhealthy, or immoral occupation, or in places where the child's health, life, limbs, or morals are endangered. The general provisions of law are the same in the two states referred to. Section first enacts that "No child under the age of sixteen years shall be employed by any person, firm, or corporation, in this state, at employment whereby its life or limb is endangered or its health is likely to be injured or its morals may be depraved by such employment."

Section two of the same act affixes a severe penalty for any one who, as employer or otherwise, causes a child to be engaged in work or otherwise exposes the child to the dangers mentioned in the first section. The third section of the Ohio act makes it the duty of the factory inspector to enforce the act.

All this legislation is as it should be. These laws recognize the child's natural liability to carelessness and say, in substance: It is a greater carelessness to permit a child to be employed at a dangerous occupation than the child can be guilty of in the discharge of its work. The carelessness of the child is never more than venial in its character. But the man of wealth and intelligence who puts him at work where his life, limb, health, or morals are endangered is, by the act, guilty of criminal neglect and should be punished for the same. It is recommended that these common sense restrictions of the law of New York and Ohio be adopted by the law makers of Minnesota. The law quoted above applies to any dangerous occupation. Machines now very dangerous may, in a few years, be



made perfectly safe. It has been said that, as now constructed, stamping machines cannot be perfectly guarded. Chief Inspector Connolly of New York, however, suggests an improvement in their construction as follows:

"I think that an improvement in these machines could be readily made without materially reducing their productive power. As constructed now, the tin is placed over the dye, the operator's foot is pressed upon a treadle, and by this act the machine is put in motion, and the upper part of the dye or stamp descends upon the tin sheet, the operator's hand, which has just placed the sheet of tin in position, being quickly removed. The accident usually occurs when the placing of the foot on the treadle and the removal of the hand are not nearly simultaneous. If the hand is slow the tenth part of a second, the descending upper die will catch it and maim the operator for life. The remedy is to put the machine in motion by action of a lever, to be operated by the hand, after the tin has been placed in position. This can easily be done, and will make a stamping machine as safe as any other piece of machinery. I hope those concerned will act upon this suggestion in the interests of humanity, if not in their own."

If the suggestion of Mr. Connelly above quoted should prove upon trial a feasible one, children could work at this class of labor as young as should be permitted with any machines. But unless and until this device or some other renders these machines harmless, no young child should be permitted to operate them. It may be urged that without child labor these machines can not be profitably operated. But if a business can only thrive by the killing or mutilation of lads of tender years, society should let it go. There is no need for moving the car of any juggernaut through our midst in this nineteenth century over the maimed body of lads just entering their teens. Whatever child labor law may be enacted, this should be made the rule in Minnesota, that children should not, before sixteen years of age, be allowed to work at any unhealthy occupation or operate any dangerous machine. Neither should they be allowed before that age to oil or clean any machinery while it is in motion.

The law of New York and Ohio, a part of which only has been given, forbids the employment of children at any trade or calling that endangers health, life, limbs, or morals. In Ohio the duty of enforcing the law falls to the portion of the factory inspector. In carrying out its provisions, the chief inspector issued, in 1890, a circular letter specifying the occupations that he deemed as coming under that which had been forbidden by the statute. The following is the section giving the list of work that can not be done in Ohio by a child under sixteen years:

"Minors under sixteen years shall not be employed at sewing belts, nor shall they be permitted to assist in sewing belts in any capacity whatever; nor shall any such children adjust belts to any machinery; they shall not operate or assist in operating circular or band saws, wood-shapers, wood-jointers, planers, sand-paper or wood polishing machinery, wood-turning or boring machinery, stamping machines in sheet metal and tinware manufacturing, stamping machines in washer and nut factories, operating corrugating rolls, such as are used in roofing or wash-board factories; they shall not oil or assist in oiling, wiping or cleaning machinery; they shall not operate or assist in operating dough brakes or cracker machinery of any description, wire or iron-straightening machinery; nor shall



they operate or assist in operating rolling mill machinery, punches or shears, washing, grinding or mixing mills, or calendar rolls in rubber manufacturing, or laundrying machinery; such children shall not be employed in any capacity in preparing composition for matches, or dipping, dyeing or packing matches; they shall not be employed in any capacity in the manufacture of paints, colors or white lead; nor shall such children be employed in any capacity whatever in operating or assisting to operate any passenger or freight elevator; nor shall such children be employed in any capacity whatever in the manufacture of goods for immoral purposes, or any other employment that may be considered dangerous to lives or limbs; and no females under sixteen years of age shall be employed in any capacity where such employment compels them to remain standing constantly."

In the foregoing list of occupations forbidden by the factory inspector of Ohio, in accordance with the provisions of the law of that state, are included many callings to which children in Minnesota have not as yet been admitted. This, for the simple reason that the industries referred to have not thus far been established in our midst. The law, it is seen, lays stress not alone upon that which concerns the physical wellbeing of the child, but that which effects its character as well.

#### MORAL SAFEGUARDS

are as much needed in Minnesota as elsewhere, and there is no place wherein they should be neglected. The chief occupation in which children in Minnesota are engaged where the occupation tends to endanger their morals is that by which many lads as messengers are sent daily into saloons, gambling hells, and the vilest dens of prostitution. There they are brought face to face with evil in its most seductive and destructive forms. The resulting evil is greater in extent than that which follows the employment of mere youths at operating dangerous machinery. For one child in Minnesota during the past year, who has had his or her hands crushed in stamping machines or ironing mangles, there must be another who, led by the business mentioned, has had the moral fibre of his budding manhood ruined.

The principle of the law of New York and Ohio relating to the employment of children at occupations where their morals are endangered should be embodied in the laws of Minnesota. The law of the states referred to has, however, been found defective in one particular. It is not enough in a statute to forbid, in general terms, the employment of children in occupations where their morals are endangered. The particular occupations or acts to be guarded against must be included in the law. To accomplish all that is desired from such a law as is here considered it must therefore be more specific in its terms. This is easy enough and with care a law could be drawn which would prohibit the present employment of children at occupations where they are by their work led into undue temptation.

For the protection of the morals of the community, the last legislature raised the age of consent for girls to the age of eighteen. It should now establish sixteen as the lowest period of human life at which manufacturers for gain shall, by danger-

ous machinery or unhealthy occupations, endanger the health, limb, or life of a child in their establishments. That same age should also be the lowest at which boys or girls, as messengers or otherwise, shall be made to aid the evil-minded in running of errands to or from saloons, houses of prostitution, or other moral nuisances.

#### THE EMPLOYMENT OF CHILDREN

never became a subject of public importance or of legislation until after the introduction of the modern factory system. Previous to that event no laws were needed for the regulation of child labor. Such labor regulated itself as a part of the household arrangements of every family. The child never came into competition with the adult. But with the incoming of factories there arose a complete change in this respect. The labor of children and women began to be used as a substitute for that of skilled mechanics, or at least to displace the labor of such mechanics, and thus to depress their wages. The labor of the child on the farm or in the household of its parents during the vacations of school is a positive benefit to the child. It is a supplement to the school or book education which he is receiving. It is a training in the use of the hand and the development in the habits of self-reliance. It aids in laying the foundation of a useful and honorable career. Hence, the greater relative proportion of successful men in all walks of life who were reared in the country. But child labor which, under favorable circumstances on the farm, leads to such a desirable end, becomes an altogether different thing when that labor has to be a part of the long hours and close confinement of factory employment. Child labor in factories has everywhere and always tended to sap the vital energies of the average growing child. It causes him to become prematurely old and too often shuts the door to all broad usefulness in after life. These evils of child labor in factories began to be apparent many years ago. Hence we find among the first legislation, for the regulation of factories, acts for the regulation of the labor of children and women in those factories. Later came the appointment of inspectors who were to enforce the provisions of those acts. At first the duty of those inspectors consisted alone of this enforcement of the regulations concerning the labor of these two classes. England had employed factory inspectors for many years before an effort was made by law to guard dangerous machinery. When parliament began to provide these safeguards, it made it the duty of the inspectors already created to see to their application. Thus, child labor and the guarding of machinery became parts of the modern system of factory inspection. This feature of factory legislation has been everywhere adopted from the earlier laws of Great Britain. The amount of such legislation in the several states of our American Union depends mainly on the present development of the factory system in the different commonwealths. Massachusetts, whose citizens first erected and oper-



ated work shops on a large scale, and in whose borders there is the largest relative factory population of any of our states, takes the lead in most of the provisions for the good of the factory operator. Minnesota is, at the present, very remiss in its factory legislation. And yet this could not have been said thirty years ago. August 2, 1858, during the first session of its legislature, after the State's admission to the Union, Minnesota passed the following law relating to the work of women and children in factories. It constitutes Chapter 24, of the General Statutes of 1878, for the

#### REGULATION OF LABOR.

"SECTION 1. In all manufactories, workshops, and other places used for mechanical and manufacturing purposes in this State, where children under the age of eighteen years and women are employed, the time of labor of the persons aforesaid shall not exceed ten hours for each day; and any owner, stockholder, or overseer, employer, clerk or foreman who compels any woman or child under eighteen years of age to labor in any day exceeding ten hours, or permits any child under the age of fourteen to labor in any factory, workshop or other place used for mechanical or manufacturing purposes, for more than ten hours in any one day, where such owner, stockholder, overseer, clerk or foreman has control, such person so offending shall be liable to a prosecution in the name of the State of Minnesota, before any justice of the peace, or court of competent jurisdiction, of the county wherein the same occurs, and upon conviction thereof, shall be fined in any sum not less than ten or more than one hundred dollars.

SEC. 2. In all engagements to labor in any mechanical or manufacturing business, a day's work, when the contract of labor is silent upon the subject, or when there is no express contract, shall consist of ten hours, and all agreements, contracts or engagements, in reference to such labor shall be so construed."

The men who introduced and secured the passage of this bill were wide awake and philanthropic citizens. At the time there could have been but a few if, indeed, there was a single woman or child regularly engaged at factory work in Minnesota. The men who secured the enactment of this law were alive to the evils which had developed in connection with factory life elsewhere, and strove by this measure to prevent their introduction into the confines of this growing commonwealth. The law then had no superior on the statute books of any state of our union, or possibly of any nation on the globe. Since its adoption great changes have taken place in this commonwealth, and in the economic conditions of the globe. Minnesota has increased about ten-fold in population and in resources. Her factories have become a great item in the sum total of her industries. The labor of women and of children in those factories has thus come to be an important feature of the world of toil. The old law of 1858 anticipated the actual need of such a statute by many years. The legislature would prevent the evils that vexed other states and nations. The wisdom and statesmanship of those earlier legislators is evidenced by the relative freedom of Minnesota all these years from the labor troubles, which by this act the fathers strove to avoid. Changes in all industries have taken place since the passage of this law. It no longer meets all the requirements of a perfect regulation of the



labor of women and children. In framing new laws the legislatures yet to meet in the State cannot do better than legislate in the spirit of the statesmanship of the law-making body of 1858. They should consider, not only the evils which now vex and annoy us, they should take counsel of other states and, if possible, prevent, as was done by the fathers of 1858, the introduction of customs and usages detrimental to the rising generation.

The recommendation has already been made that, following the example and profiting from the experience of Ohio and New York, a law be enacted forbidding the employment of children under sixteen years of age at work that is liable to endanger their health, limbs, life, or morals. There should be also enacted a general

#### CHILD LABOR LAW.

This should establish a minimum age below which a child should not be allowed to work in a factory. England began legislation of this sort by making this minimum age nine years. Later this was raised to ten, and recently to eleven years. Massachusetts has established thirteen years as the minimum of age of factory workers. New York has chosen fourteen as her standard in this respect. Experience in the New World justifies the choice of New York, and it is therefore recommended that this age of fourteen years be by law made the lowest at which a child can be employed in a factory or workshop in Minnesota.

There was no child labor in Minnesota when, in 1858, the law was enacted regulating the hours of toil. As shown by the report of this Bureau two years ago, there are now about 1,000 children under sixteen years of age employed in factories in the state. In marked contrast, then, with the situation in 1858, it must be said that there is a pressing necessity of preventing the further growth in our midst of the evils which in other places, as here, have developed in connection with this class of toil.

#### MERCANTILE ESTABLISHMENTS

employ, in Minnesota, as many women and children as do the factories. These, however, do not have in their service as many young children relatively as they did a few years ago. The introduction of the mechanical cash carriers has obviated the use of many children who once served as cash-boys and girls. This fact should be mentioned with congratulation. The long hours of some of these stores, from eight in the morning until ten at night, laid a grievous burden upon the young engaged in any capacity therein. The lessening of these excessive hours of service by the use of the mechanical inventions referred to reduces the evil to its minimum. It is suggested that now is a good time to adopt a law which will do away altogether with such long service by youthful persons in stores. The principle of the law of 1858 should be extended to the employes of stores as well as of factories.

## THE EDUCATION OF CHILDREN

occupied a large portion of the report of this Bureau in 1890. The subject of compulsory education in Minnesota has attracted much attention in connection with the consideration of an efficient child labor law. This report will not enter into any detailed discussion of such a law further than to commend the same. This part being devoted to factory inspection will treat only that which has been more directly suggested by an investigation of toil in the workshops of Minnesota. That investigation shows the advisability of some sort of educational test for the young employe of factories. Employers in those factories make rules. Those rules must be obeyed, or grave peril to life and property often results. Sometimes those rules are given orally, and at others they are written or printed. As a rule, they are promulgated in English. To comprehend them and thus be able to obey orders and avoid accidents the workman must understand English. The law adopted by New York and several other states is therefore based upon a wise perception of the needs of factory life. That law forbids the employment of children under sixteen years of age in any factory unless they can read and write simple sentences in English, except during the vacation of the public school in the city or town in which such child resides. The adoption of this law in Minnesota would here, as elsewhere, place a premium upon a certain small amount of education in the official language of the land, and would be a good measure to open the way for the passage of a complete and thoroughgoing compulsory educational bill at a later time, if such a bill could not be framed to the satisfaction of all parties at the present day.

## BOILER INSPECTION

has now been in force in Minnesota for a number of years. The working of that system of inspection demonstrates two things at least. It shows that such laws, with incompetent or corrupt men to enforce them, amount to nothing. They involve a waste of the money of the citizens, and hence are, under those circumstances, an imposition upon the public. But the same experience testifies that, with competent officials and honest ones to carry out their provisions, they are of a value above that which can be measured in dollars and cents. In the past many persons have been killed and much property destroyed by bursting boilers in Minnesota. During the last three years there has not been an explosion in the state of a boiler inspected by a state official. This is a magnificent showing and is a proof of the wisdom of the law. But equally beneficial results will follow a wise administration of a properly framed factory law.

In another chapter can be found a list of accidents in Minnesota which have come to the knowledge of this Bureau in the past two years. That list can not include over one-half of the more serious casualties happening in the State during the



given period. A good factory law will lessen the accidents in a given community at least one-half. Such a law, wisely administered, will therefore save, every two years in Minnesota, as many injuries and deaths as are to be found chronicled in chapter three. A review of that tedious chronicle of human misfortune thus becomes the most powerful plea for the enactment of a well framed factory law.

#### REPORTS OF ACCIDENTS

in factories should be required by law to be made by all employers of labor in such establishments. A study of such accidents is the best knowledge on which to formulate laws, rules, and regulations for eliminating such fatalities from factory life. Such reports are now made in all states wherein there is any system of factory inspection. The details of such accidents yearly spread before the people are more valuable than thousands of suits and arrests in securing the provisions for guarding dangerous machinery and removing unsanitary surroundings.

#### THE VENTILATION AND HEATING

of factories, as that of other buildings, is a subject which is attracting more and more attention with the passage of years. It has been briefly referred to under dust creating machines. There it was stated that operatives accomplished greater results in pure air than in an atmosphere laden with dust. They can always do more when they are made comfortable in properly ventilated and heated apartments than under other and opposite conditions. Competition is becoming keener each year. The employer, in many occupations, will succeed whose men turn out the largest product. The one will fail whose operatives fall short of their very best. The different results attained in different shops often depend alone upon the difference in ventilation and heating. One shop with cold rooms and air charged with all sorts of impurities will find its workmen dull, lifeless, and in no condition to perform their best. They cannot turn off the work which is manufactured by the shop whose inmates toil under the most favorable circumstances. The average employer is awaking to this fact and, as a result, is giving some attention to the subject of heating and ventilation. A few only in Minnesota have been found who needed to be aroused concerning the importance of the same. Several times during the year the Bureau has been appealed to by workmen to aid them in securing better heating and ventilation for the rooms in which they are employed. As a rule, a friendly conference with the employer has sufficed to accomplish the desired changes. One trouble has, however, been met with. It arises from the question, who shall pay the cost of introducing the needed changes, the owner of the building or the lessee? This question which arises concerning the introduction of proper systems of heating and ventilation also comes



up as an element of contention when fire escapes are to be constructed. The law providing for any of these measures of protection for workmen in factories should fix the responsibility somewhere for making the needed improvements. In the case of fire escapes the owner of the building should be responsible for the cost of their construction. The same rule should apply in connection with heating and ventilation when the owner of the building, by contract, agrees to warm the building or rooms used by his tenant. The same rule should apply when the heat is furnished by fixed apparatus as steam, boilers, furnaces, etc., that are a part of the building. But when the heating apparatus is supplied by the lessee, he should bear the cost of providing the warmth and ventilation ordered by the factory inspector.

Overcrowding has not been an element of danger to health in any appreciable degree in the factories and workshops of Minnesota. This can not be said for the older states where such overcrowding exists in connection with a system of tenement-house factory labor known as

#### THE SWEATING SYSTEM.

This has become a source of great danger to public health, and thus a great evil in the larger eastern cities of our land and in numerous towns of the old world. One of the best measures to prevent its introduction into this State would be the passage of a law regulating the number of operatives that could be employed in rooms for each 1,000 cubic feet of air space. This would do away with the possibility of overcrowding, aid in securing good ventilation and healthy air for all workmen, and also render it impossible for the sweating system to gain any great foothold in our State.

Ventilation is a difficult subject to legislate upon. This is mainly due to the lack of popular knowledge concerning the same. Most of the progressive states have simply required by law that all factories be properly warmed and ventilated. They have also generally given the factory inspector authority to say when these two objects have been realized and to order all changes which, in his judgment, are needed to secure the heating and ventilation specified in the statute. In carrying out this last provision, some states authorize the inspector, in all cases wherein the factory owner questions the wisdom of his rules and orders, to call to his assistance the aid of a committee of experts. Such committee shall be employed in all disputes relating to heating, ventilation, plumbing, and drainage, and the inspector shall embody their recommendations in an order, and it shall be final and obligatory.

#### GOOD DRAINAGE

is needed as well as perfect ventilation to secure healthy homes or factories. Its importance in the regulation of factories should be recognized by the provisions of law. To begin with

the statutes should require all factories and workshops to be kept in a cleanly state and free from any standing water, and from any effluvia or gas from any sewer, privy, drain, or other nuisance. All privies and water-closets, inside or outside of factory buildings, should be kept at all times in a clean state. In cases where complaints are made to the factory inspector concerning the plumbing or drainage of factories the inspector should examine the same and have authority to order all needed changes subject to the review, if called for, of a committee of experts, as has been alluded to in the preceding section.

#### SEPARATE AND DISTINCT WATER-CLOSETS OR PRIVIES

should be provided for the use of women when they are employed in factories in connection with men. These closets should be screened from public view and so arranged that employes should not be forced, in going to or from them, to meet persons of the opposite sex. The reasons for these requirements are so plain or self-evident that they do not need to be enlarged upon in this connection.

#### SEPARATE DRESSING ROOMS

for women in factories should be provided in all places where the labor performed by the operator is such as to make it desirable or necessary to change the clothes wholly or in part before leaving the building at the close of the day's toil. Such separate dressing rooms are needed in but a few of the factories of Minnesota. In those few the need is imperative. There are some laundries, for example, in Minnesota, so badly arranged that the women operators in the washroom must needs toil all day with garments more or less damp. For such workers to leave the workroom and go to their homes long distances during our cold winter weather is to peril life. Hence the need in their cases of separate dressing rooms.

#### REGULATIONS FOR BAKERIES AND RESTAURANTS.

With the passage of years an ever increasing portion of the food of the public is prepared in public bakeries and restaurants. The public have a right and should demand that such food shall be prepared, not only under good sanitary conditions, but with wholesome surroundings. Such regulations are for the benefit of the health of workmen engaged in preparing the food of the public, and also for the satisfaction of those who consume that food. And yet bakeries have been met with in the State in which ill-smelling water-closets and other filthy nuisances were maintained in the room and in close proximity to where the bread and other food was prepared. The same condition of affairs has been met with in a very few restaurants. Several bakeries which were found in a filthy state have been induced to improve their condition. In this work the Bureau has had the hearty co-operation of the Bakers' Unions. In fact,



the bakers have for some years been trying to improve the sanitary condition of the places where they toil. They have accomplished much good. One evil against which the unions of the journeymen bakers have been struggling in all parts of our country is this: Formerly these journeymen bakers were not only obliged to toil by day in filthy workrooms, but to sleep in the same by night. The effort of the unions has availed to quite largely do away with this unsanitary regulation of the average large bake shop of the past. There are, however, a few places in Minnesota where the old rule is still in force and the workmen sleep in the basement bake shops or in damp, unhealthy rooms adjoining. Recognizing the injustice of customs or usages of employers who thus cause their workmen to sleep in unhealthy places the legislature of the state of New Jersey inserted the following clauses in its factory law:

NEW JERSEY FACTORY ACT, SECTIONS 13 AND 14.

"SECTION 13. And be it enacted, that no cellar, room, or place shall be occupied as a bake-house which is less than one-half of its height above the level of the street, footway, or ground adjoining the same, unless the following regulations are complied with: First, no water-closet, earth-closet, privy, or ash-pit shall be within or communicate directly with the bake-house; second, no drain or pipe for carrying off sewerage or other impure matter shall have an opening within a bake-house, unless such drain or pipe be tapped with a six-inch water-seal, both within and without the wall of the bake-house, and have a ventilating pipe of one-half of the size of drain pipe between the wall and the outer trap, and which ventilating pipe shall run two feet above the roof of the building.

SEC. 14. And be it enacted, that the sleeping places for workmen and others employed in bake-houses shall be separate and distinct from the places used for the making of bread."

The adoption of the foregoing law is recommended with some minor changes. Its scope should be enlarged, and in Minnesota such a law should include restaurants and bake shops. The rule relating to the sleeping rooms of working bakers should here include restrictions and regulations for the sleeping rooms in hotels for the servants of the same. The attention of the Bureau has been called to hotels whose working women are given sleeping quarters in narrow, damp, insufficient and unventilated rooms in basements and even under the sidewalks of the public streets. Servants in hotels, as well as workers in factories, deserve healthy and comfortable quarters. Sleeping rooms, above all places, should be healthy and well ventilated. One indictment of the Chinese in America is the fact that in their sleeping rooms they are so crowded together in unventilated quarters. Such sleeping arrangements, it is argued, tend to beget disease, from which the whole public may be made to suffer. But there is less likelihood of disease following the overcrowding of Chinamen in damp sleeping rooms than there is in the case of white girls of European descent forced to sleep in damp holes under sidewalks. The Chinamen are used to it, the others are not, and should not be allowed to start such a fashion for working people in our midst, no matter if it does save the employer some rooms which he can sell to the public at high prices. Such unhealthy provisions



for their working women, by hotels, is a menace also to the morals of the community. The sense of decency on the part of the women is outraged and the door is thus opened for the lowering of the morals on the part of those who are herded like so many beasts in dens at night.

It is recommended, therefore, that laws be enacted that will authorize the factory inspector to visit and examine the sleeping rooms provided by hotels for their servants. If the inspector finds conditions and arrangements which he deems unhealthy he shall make recommendations of changes to secure proper accommodation for said servants. If the proprietor or lessee of the hotel is unwilling or refuses to comply with the recommendations of the inspector, said inspector shall request the President of the State Board of Health to appoint three disinterested physicians to examine the premises and to make report. If their report declares the arrangements of the said hotel to be of an unsanitary nature, the inspector shall then order the proprietor or lessee of said hotel to make all needed changes, and such order shall be obligatory.

In addition to the suggestions concerning legislation already made in this report, it is further recommended that there be created a

#### DEPARTMENT OF FACTORY INSPECTION.

This should be either a department by itself, or a special section of the present Bureau of Labor Statistics. If no new department of factory inspection is created, the clerical force of the Bureau of Labor Statistics should be enlarged, and so arranged that the inspection of factories and the enforcement of labor laws should be made the duty of one set of officers and the collection of statistics of another. Statistics relating to wages and hours of labor of the workmen, and the profits, etc., etc., of the employers, depend, for their correctness, upon the goodwill and co-operation of the persons who are called upon to furnish the data. But the successful administration of an efficient factory law, or the enforcement of legislation for the protection of the rights of the working classes, sometimes calls for suits at law against obstinate factory owners and other employers of labor. If an officer thus prosecutes a man to enforce a provision of law, he would thereafter find it difficult to gain from him a hearty co-operation in his labor of gathering statistics. This fact is recognized by most of our states, and hence but two or three have factory inspection in the same department with that of labor statistics.

In those states, where factory inspection is a part of the Bureau of Labor Statistics, the deputies of that Bureau are separated into two classes. Those belonging to one class devote their time to the collection and compilation of statistics, those who are members of the second class are employed in inspecting factories and in enforcing labor laws. If the legislature deem it inexpedient at the present time to create a separate Bureau of Factory Inspection, it is recommended.

as mentioned above, that such a division of the present clerical force of the Bureau be made. The Commissioner would then have the supervision and direction of both classes of work as heretofore. In this event, however, there should be added to the present clerical force of the Bureau three persons to act exclusively as factory inspectors, and one as type-writer and clerk. One of the three factory inspectors shall be designated as Chief Factory Inspector and the others as Deputy Factory Inspectors. Orders for the guarding of machinery should be issued in the name of the Chief Factory Inspector. So, also, it should be his duty to institute proceedings in the courts to secure the conviction of persons violating laws enacted for the protection of the working classes. The Commissioner of the Bureau should have the power to divide the State into districts and assign the factory inspectors to those districts with headquarters at the most important town in the given districts.

#### MINE INSPECTION

is a subject closely related to that of factory inspection. It is one which, in Minnesota, has begun to attract attention during the past few years, with the opening of the iron mines in the northern portion of the State. Those mines, at the present, seem to hold out the prospect of becoming, next to agriculture, the greatest source of wealth and the greatest employer of labor of any line of industry in the State. There is a crying need of a system of State regulation and inspection for these mines as was so clearly shown by the last report of this Bureau. But there is also need of caution on the part of the law-makers lest, by any unwise legislation, a law should be framed which would tend to cripple or delay the development of the mining of ore and the manufacturing of iron in our midst. Mining, while it is an industry found in all parts of the globe, presents some special features in each given locality. Hence, it never suffices to enact a law for the regulation of mines in one section and make it a mere copy of the statutes of an entirely different portion of the country. The general principles relating to mine inspection, now adopted by all civilized nations, need to be adapted to the exigencies of each particular state or section. This fact has of recent years been recognized by law-makers in many states. Before enacting a mine inspection law, they have appointed commissions of disinterested men to study the subject with reference to its local requirements and to submit a draft of a bill for the regulation of mines. It is recommended that this method be adopted by the legislature of Minnesota. A commission could be constituted of the Commissioner of the Bureau of Labor Statistics, the State Geologist, the State Factory Inspector, (if one should be appointed in accordance with previous recommendations,) one of the leading mine owners of the State, and a practical representative of the mine workers. This commission should be authorized to prepare a bill for an act to regulate the mining industry of Minne-

sota, and to submit the same to the next session of the legislature.

#### RECOMMENDATIONS.

For the greater convenience of the members of the legislature the recommendations herein made relating to provisions for the protection of the health, life, limbs, and morals of the workers in factories and other places are summarized as follows:

1. In addition to the law of 1883 for "The Preservation of Life, etc.," there should be enacted a law for the more perfect regulation of ways of egress and means of escape from fire in buildings.

2. A law should be enacted providing for the regular inspection of freight and passenger elevators and for enforcing reasonable regulations for the safety of the passengers carried by elevators, and for that of the inmates of the buildings in which said elevators are situated.

3. That provision be made by law for preventing the use of defective and unsafe machinery, to secure all proper guards for dangerous machinery, and places in and about factories, and to secure the proper heating, ventilation, and drainage of factories and workshops.

4. That the following provisions relating to child labor be enacted: The employment of all children under sixteen years of age should be forbidden in connection with occupations where they are liable to be injured in health, life, limbs, or morals. Children under fourteen years of age should be prohibited from working in any factory or workshop of the State. Chapter twenty-four of the General Statutes of 1878 should be amended, and owners of mercantile establishments forbidden to employ women or children more than ten hours in any one day. Children under sixteen years of age should not be allowed to work in factories, excepting during the vacations of the public schools, unless they can read and write simple sentences in the English language.

5. Employers of labor should be required by law to report to the inspector of factories all serious accidents happening to their employees.

6. Separate and distinct water-closets should be required by law for women in all factories wherein they are employed in the same building with men, and separate dressing rooms should, in the same way, be furnished in factories where the occupation is such that a change of raiment is necessary for the operator before she appears upon the street.

7. The factory inspector should have authority to enforce sanitary regulations for bake-shops, and to examine the sleeping quarters provided for the servants of hotels, and to order, subject to reasonable rules, such changes as will give to those servants healthy accommodations.

8. The creation of a department of factory inspection, either by itself or in connection with that of the present Bureau of Labor Statistics.



9. The creation of a commission consisting of the Commissioner of the Bureau of Labor Statistics, State Geologist, Factory Inspector, a mine owner, a mine worker to investigate the subject of mine inspection in Minnesota, and to report to the next legislature a draft of a bill for mine inspection.

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## CHAPTER II.

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### STATISTICAL TABLES.

#### SUMMARY.

During the period between May 1, 1891, and Sept. 1, 1892, the inspector has visited, as will be found by the accompanying table, 445 establishments in the State. Those establishments employed 28,247 workmen of whom 24,136 were males and 4,111 were females. The workshops visited do not include all the factories in Minnesota, but only the more important ones in the leading cities and towns. They were all that the Bureau was able to inspect with the force at its disposal for that class of work. The total number of persons engaged in all the factories and workshops of the State is doubtless not far from 40,000. These, together with those dependent upon them, make up a vast body of people whose welfare must greatly concern the State.

Of the factories visited 121, or a little over one-fourth, were in such condition as that the inspector made no recommendations. In the other 324 establishments, recommendations were made as is shown in the accompanying tables. In 107 of them the recommendations of the department were fully complied with. In 97 they were partially so. There were in contrast with these 97 factory owners who practically did nothing recommended by the Bureau to make their workshops safer or healthier for their work people. In addition to those included in the foregoing three heads, there were twelve establishments visited that subsequent to the visit of the inspector were burned, their managers assigned, or went out of business. Eleven others were visited late in the season and the department has not received a report from them. They are marked "not reported." The managers of most of these establishments promised compliance with the suggestions offered. They doubtless have complied as have also some few of those who are in the table marked "not complied."

## STATISTICAL TABLES.

Number.	Goods Manufactured.	No. Empl'd.		Recommendations made.	Compliances.
		Males.	Females.		
ANOKA COUNTY.					
1	Sash, Doors, etc..	40	...	Provide suitable guards for rip-saws and jointer; case in lower wheel of band-saw; case in pulleys and belts.....	Partially.
2	Flour.....	45	...	No recommendations.....	.....
3	Boots and Shoes.	45	27	Box shafting under sewing machine tables; railing or casing around fly wheel in engine room; case in main driving belt; suitable protection for elevator opening on second floor....	Partially.
4	Starch.....	15	...	No recommendations.....	.....
5	Sash, Doors, etc..	20	...	Provide suitable guards for rip-saws; case in lower wheel of band-saw and provide some suitable protection in front of top wheel.....	Not complied.
BENTON COUNTY.					
6	Planed Lumber..	4	...	No recommendations.....	.....
7	Sash, Doors, etc..	5	...	Provide suitable guard for rip-saw; and belt shifters for shift belts; case in belt running through floor, and the lower wheel of band-saw and provide suitable protection in front of top wheel of band-saw ..	Partially.
BLUE EARTH COUNTY.					
8	Woodenware.....	48	...	Case in pulleys and belts; provide belt-shifters for shift belts; box cut-off saws; case in the fly-wheel in engine room.....	Partially.
9	General repairin'	4	...	No recommendations.....	.....
10	Cement.....	63	...	Provide a substantial railing or casing around fly-wheel in engine room; suitable protection for gearing on second floor.....	Complied.
11	Candies.....	8	8	No recommendations.....	.....
12	Flour.....	40	...	Cover set screws; provide suitable protection for gearing on bolting chests....	Partially.
13	Engines, Boilers.	20	...	No recommendations.....	.....
14	Furniture.....	11	...	No recommendations.....	.....
15	Canned Goods....	30	...	No recommendations.....	.....
16	Flax Fiberware..	14	21	Cover set screws; provide dressing room for female employes; a substantial railing around two large vats.....	Partially.
17	Flour.....	8	...	Provide suitable protection for gearing on bolting chests on second and third floors; cover set screws.....	Complied.
18	Linseed Oil.....	30	...	Provide a substantial railing or casing around fly-wheels in engine room; cover set screws and gearing.....	Partially.
19	Knit Goods.....	2	18	No recommendations.....	.....
20	Laundry.....	2	10	No recommendations.....	.....
CARLTON COUNTY.					
21	Lumber.....	100	...	Case in pulleys and belts in saw mill and planing mill; cover set screws and couplings; railing or casing around fly wheel.....	Not complied.
22	Lumber.....	150	...	Cover set screws and couplings; extend railing the entire length of main driving belt; substantial railing or casing around two large fly-wheels; hand rails on two stairs; case in pulleys and belts.	Partially.
23	Lumber.....	175	...	Cover set screws and couplings; provide hood for cut off saw; suitable guard for rip saw.....	Partially.
24	Lumber.....	180	...	Provide a railing or casing around two large fly wheels; cover two cut off saws; cover set screws and couplings; box slasher saw.....	Partially.
25	Lumber.....	120	...	Cover set screws and couplings; cover hatchway on lower floor or put strong railing around; cover holes on lower floor; cover gearing.....	Complied.

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
CARLTON COUNTY—Continued.					
26	Planed Lumber..	30	...	Case in pulleys and belts; railing or casing around fly-wheel; cover set screws and couplings.....	Not complied.
27	Planed Lumber..	59	...	Extend railing around exposed part of fly wheel; case in pulleys and belts; cover set screws and couplings.....	Not complied.
CROW WING COUNTY.					
28	Car Repairing....	593	...	Case in lower wheel of band saw; box cut off saw; case in pulleys and belts.....	Complied.
29	Lumber.....	125	...	Cover gearing; cover two cut of saws; case in several pulleys and belts.....	Partially.
30	Planed Lumber..	28	...	Provide substantial railing or casing around fly wheel in engine room; case in pulleys and belts .....	Not complied.
DAKOTA COUNTY.					
31	Flour.....	50	...	Cover couplings and set screws; suitable protection in front of exposed gear wheels on bolting chests.....	Not complied.
32	Sash, Doors, etc..	4	...	Provide hood for cut off saw; suitable guard for rip saw.....	Not complied.
33	Electric Light....	2	...	Provide a substantial railing or casing on each side of wheels and belts driving dynamos.....	Not complied.
34	Car repairing....	300	...	Case in bottom wheel of band saw.....	Complied.
35	Beef & Pork Pkrs	341	...	Cover set screws and couplings; provide substantial railing or casing around exposed part of fly wheel in engine room in box factory.....	Not complied.
36	Lumber, Sash, Door, etc.....	117	...	Provide suitable guards for rip saws and jointer; case in lower wheel of band saw; substantial railing or casing around fly wheel in engine room in saw mill. . .	Partially.
37	Beef & Pork Pkrs	25	...	Provide a substantial railing or casing around fly wheel in engine room.....	Complied.
38	Mill Machinery .	6	...	Provide suitable guard for rip saw.....	Not complied.
39	Barrels and Kegs	75	...	Provide a substantial railing or casing around fly wheel in engine room; hand-rails on stairs.....	Complied.
40	Grain and Feed Elevator.....	6	...	Provide a substantial railing or casing around fly wheel in engine room; case in the main driving belt.....	Not complied.
GOODHUE COUNTY.					
41	Grain elevator...	6	...	Provide a substantial railing or casing around fly-wheel in engine room; case in main driving belt .....	Complied.
42	Electric light ....	3	...	No recommendations.....	.....
43	Stoneware ..	76	...	No recommendations.....	.....
44	Sash, doors, etc..	19	...	Provide suitable guards for rip-saws; cover couplings; case in pulleys and belts; suitable guard for jointer; cover gearing.....	Not complied.
45	Flour.....	29	...	No recommendations.....	.....
46	Laundry.....	2	3	Cover gearing on or about collar and cuff machine.....	Complied.
47	Furniture .....	77	...	Case in lower wheel of two band-saws and some protection in front of top wheel; cover gearing on wood polisher; case in pulleys and belts; suitable guards for three jointers and rip-saws; hand-rails on stairs; provide automatic gates on each floor for two elevators in warehouse	Partially.
48	Stoneware .....	75	...	Provide a substantial railing around fly-wheel and engine; cover hatchway; cover set-screws and couplings.....	Partially.
49	Furs. ....	6	11	Box shafting under sewing machine tables	Complied.
50	Engines, repairing, etc.....	10	...	No recommendations.....	.....
51	Furniture .....	50	...	Case in lower wheel of band-saw and some protection in front of the top wheel; suitable guard for rip-saws; case in belts operating through second floor; cover gearing; substantial casing or railing around exposed part of fly-wheel in engine room; hand rails on stairs.....	Partially.



No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
HENNEPIN COUNTY.					
52	Farm machinery.	43	....	Case in lower wheel of band-saw; substantial railing or casing four feet high, around fly-wheel in engine room.	Not complied.
53	Linseed oil, etc...	40	....	Provide suitable protection at each elevator opening.	Not complied.
54	Grain Elevator...	13	....	No recommendations.	.....
55	Grain Elevator...	13	....	No recommendations.	.....
56	Machinery .....	6	....	No recommendations.	.....
57	Cigars .....	7	14	No recommendations.	.....
58	Confectionery ...	46	69	No recommendations.	.....
59	Furs .....	7	10	Provide a fire escape on building with balconies and inclined ladder; remove boxes, etc. from stairs.	Complied.
60	Sash, Doors, etc..	20	....	Provide suitable guards for rip-saws; case in pulleys and belts.	Partially.
61	Shirts, etc.....	2	18	Box shafting under sewing machine tables	Complied.
62	Sash, Doors, etc..	125	....	Provide suitable guards for rip-saws; case in pulleys and belts; case in lower wheel of two band-saws; suitable guard for jointer.	Partially.
63	Grain Elevator..	26	....	Case in the elevator platform	Not complied.
64	Furniture.....	12	....	Case in pulleys and belts; suitable guard for wood-shaper; case in lower wheel of band-saws; suitable guards for two jointers and rip-saw.	Not complied.
65	Stained Glass....	15	....	No recommendations.	.....
66	Blankets, etc....	140	95	Provide separate and distinct water-closet for female employees; case in belts operating through floor	Complied.
67	Furniture .....	150	....	Provide suitable guards for jointers and rip-saws; case in pulleys and belts; case in lower wheel of band-saw; cover set-screws	Partially.
68	Sash, Doors, etc..	300	....	Provide suitable guards for rip-saws and jointers; case in pulleys and belts; substantial railing or casing around fly-wheel in engine room; suitable guard for wood shaper; case in lower wheel of band-saw.	Partially.
69	Sash, Doors, etc..	70	....	Provide suitable guards for rip-saws and jointers; case in pulleys and belts; cover relisher-saws; suitable guard for wood-shaper.	Partially.
70	Pianos.....	95	....	Provide suitable guard for rip-saw.	Not complied.
71	Shirts.....	2	8	Box shafting under sewing machine tables	Complied.
72	Confectionery....	8	6	No recommendations.	.....
73	Furs .....	12	43	Keep doors unlocked during working hours	Not complied.
74	Confectionery,...	30	30	Thoroughly and frequently disinfect water-closets	Complied.
75	Cigars .....	17	8	No recommendations.	.....
76	Clothing.....	75	225	No recommendations.	.....
77	Flour.....	220	....	Provide a substantial railing or casing around fly-wheel in engine room.	Not complied.
78	Laundry.....	1	7	Case in belt operating through floor.	Not complied.
79	Lumber.....	95	....	Provide substantial railing or casing around three fly-wheels to engines; also around wheels and belts running circular and gang-saws; case in several pulleys and belts; cover set-screws and gearing.	Partially.
80	Show Cases.....	26	....	Provide a suitable guard for rip-saw.	Not complied.
81	Lumber.....	25	....	Box slasher-saw and cut-off saw; cover conveyor.	Complied.
82	Shirts.....	2	17	Box shafting under sewing machine tables; also the main driving belt and pulley; provide separate and distinct water-closets and dressing rooms for female employees.	Complied.
83	Electric light ....	26	....	Provide substantial railing around fly-wheels and belts driving dynamos.	Not complied.
84	Lumber.....	35	....	Case in pulleys and belts in three places; cover exposed gearing.	Complied.
85	Furs .....	4	12	No recommendations.	.....
86	Cigars .....	30	75	No recommendations.	.....
87	Flour .....	32	....	Cover set-screws; provide suitable protection for gearing on bolting chest on fifth floor; case in main driving belt operating through floor.	Partially.
88	Lumber.....	160	....	Provide substantial railing or casing around fly-wheel in engine room.	Not complied.

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
HENNEPIN COUNTY—Continued.					
89	Shirts & overalls.	4	36	Box shafting under sewing machine tables	Not complied.
90	Laundry.....	2	5	No recommendations.....	.....
91	Paper boxes.....	14	56	Thoroughly and frequently disinfect water closets; provide belt shifters for all shift belts.....	Complied.
92	Lumber.....	45	....	Provide a substantial railing or casing around exposed part of fly-wheel in engine room; case in pulleys and belts, and belt operating through floor; railing along the exposed part of main driving belt.....	Complied.
93	Laundry.....	3	8	No recommendations.....	.....
94	Overalls.....	12	288	Box shafting under sewing machine tables; thoroughly and frequently disinfect water-closets.....	Complied.
95	Flour.....	18	....	Case in pulleys and belts and cover large gearing; suitable protection for gearing on bolting chests on third, fourth and fifth floors; cover set-screws and couplings.....	Partially.
96	Laundry.....	1	4	Provide substantial railing or casing around fly-wheel in engine room.....	Complied.
97	Shirts and Overalls.....	3	32	No recommendations.....	.....
98	Sash Doors, etc.	175	....	Provide suitable guards for rip-saws; case in pulleys and belts in several places; case in lower wheel of band-saw; hood over each emery-wheel and railing on stairs.....	Complied.
99	Lumber.....	140	....	Case in pulley and belt running conveyor; railing around fly-wheel in engine room.....	Complied.
100	Laundry.....	4	5	Cover gearing on shirt ironer.....	Complied.
101	Cooperage.....	70	....	Provide substantial railing or casing around fly-wheel in engine room.....	Not complied.
102	Organs.....	13	1	No recommendations.....	.....
103	Flour.....	50	....	No recommendations.....	.....
104	Architectural Iron Work.....	150	....	Case in lower wheel of band-saw, and provide a suitable guard for jointer.....	Not complied.
105	Lumber.....	110	....	*Case in pulleys, belts and cover gearing.....	.....
106	Iron Pipe supplies	5	....	No recommendations.....	.....
107	Cigars.....	3	5	No recommendations.....	.....
108	Laundry.....	3	4	No recommendations.....	.....
109	Boxes.....	15	....	Case in lower wheel of large band-saw; provide suitable guard for rip-saw.....	Not complied.
110	Sash, Doors, etc.	75	....	Provide suitable guards for rip-saws; hand-rail on stairs; suitable guards for jointers and shaper; case in pulleys and belts; case in lower wheel of band-saw and some suitable protection in front of top wheel.....	Partially.
111	Boots and Shoes.	165	85	Box shafting under sewing machine tables; case in main driving belt operating through the floors; provide suitable stairway fire-escape.....	Complied.
112	Shirts.....	5	45	Box shafting under sewing machine tables; case in main driving belt and pulley; provide separate and distinct water-closet and dressing room for female employees; case in electric motor.	Complied.
113	Furniture.....	124	6	Case in pulleys and belts and belts operating through floors; case in lower wheel of three band saws; provide suitable guards for six rip-saws and four jointers; provide automatic gates for two elevators on each floor; cover set-screws; provide hood for cut-off saw.....	Partially.
114	Flour.....	55	....	No recommendations.....	.....
115	Laundry.....	4	10	No recommendations.....	.....
116	Lumber.....	166	....	Case in lower wheel of band-saw in machine shop; case in pulleys and belts in several places.....	Partially.
117	Corn Meal.....	13	....	Provide substantial railing or casing around exposed part of fly-wheel in engine room; cover gearing on second floor; case in pulleys and belts and put railing on stairs.....	NotComplied.
118	Chairs, etc. ....	30	10	Case in lower wheel of band-saw and some suitable protection in front of top wheel; case in pulleys and belts.....	Complied.

\*Destroyed by fire.

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
HENNEPIN COUNTY—Continued.					
119	Laundry... . . . .	10	15	Provide a safety strip or bar in front of feed roll on ironing mangle, the said strip to extend the entire length of the roll; suitable protection in front of feed roll on collar and cuff machine.....	Not complied.
120	Electric Motors, and Dynamos..	12	....	No recommendations.....	.....
121	Lumber .....	111	....	Provide substantial railing or casing around exposed part of fly-wheel; railing on each side of passageway where large belt runs; case in large pulleys and belts	Partially.
122	Underwear.....	5	65	Box shafting under sewing machine tables and also under knitting machines.....	Partially.
123	Stained Glass .	50	....	Thoroughly and frequently disinfect water closets.....	Complied.
124	Flour .....	46	....	Case in main driving belt; provide railing at head of stairs; suitable protection for gearing on bolting chests on third, fourth fifth and sixth floors.....	Not complied.
125	Planed Lumber..	15	....	Provide substantial railing or casing around fly-wheel in engine room.....	Complied.
126	Laundry .....	3	15	Cover the rolls on ironing mangle.....	Complied.
127	Planed Lumber..	20	....	Case in pulleys and belts in two places..	Complied.
128	Wagons, etc.	6	....	Provide suitable guard for rip-saw; case in lower wheel of band-saw.....	Partially.
129	Flour .....	150	....	Cover set-screws and gearing.....	Complied.
130	Shirts, Overalls..	2	23	No recommendations .....	.....
131	Printing Office..	152	3	Provide better ventilation in composing room.....	Complied.
132	Lumber.....	350	....	Box four slasher-saws; extend the railing the entire length around fly-wheel; cover gearing; provide substantial railing along the entire length of large belt running rotary-saw; case in the lower part of siding-saw.....	Complied.
133	Sash, Doors, etc..	75	....	Provide suitable guards for rip-saws; case in lower wheel of band-saw; case in pulleys and belts; railing or casing around exposed part of fly-wheel in engine room	Partially.
134	Laundry .....	14	31	Cover gearing on shirt ironer; suitable protection in front of feed-rolls on collar and cuff machine; repair the automatic trap-doors on elevator and keep them in use.....	Not complied.
135	Planed Lumber..	12	....	Provide substantial railing or casing around fly-wheel in engine room; case in pulleys and belts.....	Not complied.
136	Flour.....	58	....	Provide some suitable protection in front of gearing on bolting chests on fourth, fifth and sixth floors.....	Not complied.
137	Furniture.. . . .	85	1	Provide suitable guards for rip-saws and jointers; automatic gate at elevator opening on second floor; case in pulleys and belts in several places, and cover set-screws; safety strip or bar in front of feed rolls on sander-machine; cover gearing; case in lower wheel of band-saw	Partially.
138	Furniture .....	39	....	Provide automatic gates at each elevator opening.....	Complied.
139	Laundry.....	5	19	Provide safety strip or bar in front of feed rolls on two ironing mangles; cover gearing on shirt ironer.....	Partially.
140	Lumber.....	115	....	*Case in several large pulleys and belts; cover hatchways.....	.....
141	Flour .....	80	....	Cover set-screws and couplings; suitable protection for gearing on bolting chests on third and fourth floors; railing around elevator opening on each floor.....	Complied.
142	Sash, Doors, etc..	125	....	Provide suitable guards for rip-saws and jointers; case in pulleys and belts; case in lower wheel of band-saw.....	Partially.
143	Grain Elevator ..	7	...	Provide substantial railing or casing around fly-wheel in engine room.....	Not complied.
144	Cigars.....	10	....	No recommendations.....	.....
145	Sash, Doors, etc..	30	....	*Provide suitable guards for rip-saws; case in pulleys and belts; hand rail on stairs.....	.....
146	Lumber .....	100	...	Provide substantial railings or casings around three fly-wheels; case in pulleys and belts; cover set-screws.....	Complied.

\*Destroyed by fire.

\*Assigned.



No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	.		
HENNEPIN COUNTY—Continued.					
147	Grain Elevator ..	25	....	Provide a substantial railing or casing around fly-wheel in engine room; cover large gearing; also couplings; provide a railing at head of stairs on three top floors .....	Not complied.
148	Cigars.....	6	4	No recommendations .....	.....
149	Rail'y Car Shops.	371	....	No recommendations .....	.....
150	Planed Lumber.	15	....	No recommendations .....	.....
151	Billiard and Pool Balls .....	11	2	No recommendations .....	.....
152	Crash Toweling..	12	11	Extend the railing the entire length around fly-wheel in engine room; cover gearing and cut-off key on carding machine; thoroughly and frequently disinfect water-closets .....	Complied.
153	Lumber.....	64	...	Case in pulleys and belts in several places; provide railing around large hole in floor .....	Partially
154	Flour.....	26	....	Provide hand rails on stairs .....	Not complied.
155	Laundry .....	13	32	Cover gearing on two ironing mangles; suitable protection in front of feed rolls on collar and cuff ironer .....	Complied.
156	Planed Lumber..	150	...	Case in pulleys and belts; provide belt-shifters for all shift belts .....	Partially.
157	Crackers & Con- fectionery.....	113	70	No recommendations .....	.....
158	Sash, Doors, etc..	80	....	*Provide suitable guards for rip-saws and jointers; case in pulleys and belts .....	.....
159	Paper .....	50	2	Cover gearing in several places .....	Complied.
160	Flour.....	40	....	Provide suitable protection in front of gearing on bolting chests on second, third and fourth floors; also gearing running conveyor; cover set screws .....	Not complied.
161	Sash, Doors, etc..	16	....	*Provide suitable guards for rip-saws; case in pulleys and belts .....	.....
162	Sash, Doors, etc..	12	....	Provide suitable guards for rip-saw and jointer .....	Not complied.
163	Laundry .....	7	33	Provide a substantial railing or casing around fly-wheel in engine room; safety strip or bar in front of feed rolls on small ironing mangle; case in belts operating through second floor; repair automatic trap-doors to elevator and keep them in use; provide new cable for elevator .....	Complied.
164	Coffins & Caskets	18	....	Provide suitable guards for rip-saws and jointers; railing or casing around fly-wheel in engine room; case in lower wheel of band-saw; cover gearing; safety strip or bar in front of feed rolls on wood polisher .....	Not complied.
165	Lumber.....	491	....	Box cut-off saw; case in belts running through floor and case in pulleys and belts .....	Partially.
166	Plows, etc .....	45	....	No recommendations .....	.....
167	Coffins, caskts, etc	75	10	Provide suitable guards for rip-saws and jointers; hood over emery wheels; guards for two wood shapers; substantial railing or casing around fly-wheel in engine room; cover gearing and case in pulleys and belts on sander machine; cover set-screws; case in lower wheel of band-saw; case in pulleys and belts in several places .....	Complied.
168	Dump Cars.....	20	....	Provide a suitable guard for rip-saw and wood-shaper; case in lower wheel of band-saw .....	Partially.
169	Laundry.....	8	32	Case in belts operating through floor. ....	Complied.
170	Refrigerators, etc	15	....	Guard emery wheels; case in lower wheel of band-saw; suitable guard for rip-saw; suitable protection at elevator opening; case in pulleys and belts in several places; suitable guard for jointer .....	Partially.
171	Excelsior, Mould- ings, etc .....	25	....	Box cut-off saw; case in pulleys and belts; suitable guard for rip-saw .....	Partially.
172	Machinery .....	21	....	Provide substantial railing or casing around fly-wheel in engine room .....	Complied.
173	Cigars.....	7	8	No recommendations .....	.....

\*Assigned.

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
HENNEPIN COUNTY—Continued.					
174	Flour.....	80	...	Provide suitable protection for gearing on bolting chests on third, fourth, fifth, and sixth floors; also gearing running conveyor; case in main driving belt operating through floors.....	Complied.
175	Trunks .....	18	...	Provide suitable guard for rip-saw; cover set-screws and case in shafting on floor; also pulleys and belts.....	Partially.
176	Furniture.....	34	...	Provide belt shifters for shift belts.....	Not complied.
177	Carpet Cleaning.	8	2	No recommendations.....	.....
178	Flour.....	9	...	No recommendations.....	.....
179	Sash, Doors, etc..	30	...	Provide suitable guards for rip-saws and jointer; case in pulleys and belts; case in lower wheel of band-saw; cover relisher saws.....	Partially.
180	Ry. Car Shops....	304	...	Case in lower wheel of band-saw.....	Complied.
181	Flour.....	40	...	Cover or remove shafting near passageway.....	Complied.
182	Stoves .....	63	...	No recommendations.....	.....
183	Mill Machinery..	27	...	Provide suitable guards for rip-saw, jointer and wood-shaper; case in lower wheel of band-saw.....	Not complied.
184	Flour.....	70	...	Cover set-screws; provide suitable protection for gearing on bolting chests on fourth, fifth and sixth floors; hand-rails on stairs and at head of stairs; new friction clutch in basement.....	Partially.
185	Furniture.....	15	...	Provide suitable guards for rip-saw and jointer; case in pulleys and belts and lower wheel of band-saw.....	Partially.
186	Flour.....	119	...	Cover set-screws and cover large gearing and gearing running conveyor in basement; suitable protection for gearing on small bolting chest on fourth and also gearing on fifth floor.....	Partially.
187	Architectural Iron & Castings	62	...	No recommendations.....	.....
188	Mill Machinery..	75	...	Case in lower wheel of two band-saws; provide suitable guards for rip-saws and jointers.....	Not complied.
189	Wooden Special- ties.....	50	...	Provide suitable guards for rip-saws, case in lower wheel of band-saw; case in pulleys and belts; provide belt-shifters for all shift belts.....	Partially.
190	Dye Works.....	8	4	No recommendations.....	.....
191	Flour.....	21	...	Provide suitable protection for gearing on bolting chests on third, fourth and fifth floors; also gearing running conveyor on top floor; cover set screws.....	Partially
192	Sash, Doors and Blinds.....	75	...	Provide suitable guards for rip-saws, jointers and wood shapers.....	Not complied.
193	Wood and Wire Fence.....	10	...	Cover gearing on loom machines.....	Not complied.
194	Flour.....	45	...	Case in belts operating through floor; cover set screws.....	Complied.
195	Boxes.....	20	...	Suitable guards for rip-saws; case in pulleys and belts; cover shafting and couplings.....	Partially.
196	Grain Elevator..	11	..	No recommendations.....	.....
197	Flour.....	55	...	No recommendations.....	.....
198	Wagons and Car- riages .....	22	...	Provide suitable guards for rip-saw and jointer; case in lower wheel of band-saw; case in pulleys and belts.....	Partially.
199	Harvesters and Binders.....	200	...	No recommendations.....	.....
200	Flour.....	18	...	Cover gearing running conveyor on third floor; cover set-screws; provide a new railing at head of stairs on top floor.....	Partially.
201	Sash, Doors and Blinds.....	60	...	Case in lower wheels of two band-saws; suitable guards for rip-saws and jointers; cover saws on relisher; case in pulleys and belts and cover set-screws..	Not complied.
202	AirTubeHeaters.	8	...	No recommendations.....	.....
203	Lumber.....	375	...	Case in lower wheel of band-saw; case in belts operating through floor; cover set screws; substantial railing or casing around fly-wheel in engine room.....	Partially.
204	Lumber.....	200	...	Provide substantial railing or casing around fly-wheels in engine rooms of planing mill and saw mill; case in main driving belt and pulley in planing mill; cover gearing running conveyor in saw mill; cover set screws.....	Complied.

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
HENNEPIN COUNTY—Continued.					
205	Sash, Doors, etc..	50	....	Provide suitable guards for rip-saws and jointer; case in pulleys and belts.....	Not complied.
MORRISON COUNTY.					
206	Sash, Doors, etc..	12	....	No recommendations.....	.....
207	Lumber.....	100	....	Cover gearing and case in pulleys and belts.....	Complied.
208	Flour.....	10	....	Case in pulleys and belts; provide suitable protection for gearing on bolting chests on third and fourth floors; cover set-screws; railing around hatchway. . . .	Complied.
209	Electric Light...	4	....	No recommendations.....	.....
210	Paper.....	20	....	Cover gearing in several places; case in pulleys and belts; cover set screws	Partially.
211	Lumber.....	55	....	Cover gearing; case in pulleys and belts; box slasher saw.....	Complied.
212	Planed Lumber..	10	....	Provide substantial railing or casing around fly-wheel in engine room; suitable guard for rip-saw; belt-shifters for all shift belts.....	Complied.
213	Flour.....	12	....	Provide substantial railing or casing around fly-wheel in engine room; suitable protection for gearing on bolting chests on second and third floors; case in main driving belt operating through floors; cover set screws; case in pulleys and chains.....	Complied.
214	Lumber.....	7	....	No recommendations.....	.....
215	Flour.....	3	....	Provide substantial railing or casing around fly-wheel in engine room; cover set-screws.....	Not complied.
NICOLLET COUNTY.					
216	Furniture.....	28	....	Case in lower wheel of band-saw and some protection in front of the top wheel; extend railing around exposed part of fly-wheel in engine room.....	Complied.
217	Flour.....	17	....	Provide suitable protection for gearing on bolting chests on second and third floors.....	Complied.
218	Furniture.....	16	....	Case in lower wheel of band-saw; railing around fly-wheel in engine room; hood for cut-off saw; suitable guard for rip-saw.....	Partially.
RAMSEY COUNTY.					
219	Plows and Agricultural Imp'ls	120	....	Provide suitable guard for rip-saw; hood for cut-off saw; case in lower wheel of band-saw; substantial railing or casing four feet high around fly-wheel in engine room; cover set-screws.....	Complied.
220	Sweat Pads.....	14	11	Box shafting under sewing machine tables driving sewing machines.....	Complied.
221	Organs.....	64	2	Case in belts operating through second floor; box pulleys and belts in two places; suitable guard for rip-saw; substantial casing or railing around fly-wheel.....	Partially.
222	Furniture.....	135	....	Provide suitable guards for five rip-saws; two jointers; two wood-shapers; case in bottom wheel of band-saw; cover set-screws; cover gearing on moulding machine; box shafting, pulleys, etc., in several places as explained by inspector; substantial casing around exposed part of fly-wheel in engine room; case in upper and lower part of siding-saw.....	Complied.
223	Coffins, Caskets..	37	5	Provide suitable guard for rip-saw and jointer; case in bottom wheel of band-saw; box shafting, pulleys, etc.....	Not complied.
224	Chairs.....	25	....	Provide substantial railing around fly-wheel in engine room; case in bottom wheel of band-saw; suitable guard for rip-saw.....	Complied.
225	Laundry.....	6	12	Provide a railing around opening of stairway on top floor.....	Complied.
226	Laundry.....	6	13	Case in belt where it operates through first floor; clean and disinfect water-closets frequently; provide some suitable protection in front of feed rolls on collar and cuff ironer. ....	Partially.



No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
RAMSEY COUNTY—Continued.					
227	Furniture .....	54	...	Provide suitable guard for rip-saw and jointer; case in lower wheel of band-saw; box shafting, pulleys, etc.....	Not complied.
228	Laundry.. .....	2	2	Cover gear-wheels on or about shirt ironer; casing or railing around fly-wheel in engine room .....	Not complied.
229	Laundry.....	4	10	No recommendations .....	.....
230	Sash, doors, etc....	36	...	Suitable guards for rip-saws and jointers; hood for cut-off saw; case in bottom wheel of band-saw; casing or railing around fly-wheel in engine room; case in belts operating through second floor; case in shafting, pulleys, etc.....	Partially.
231	Furniture.....	40	1	No recommendations .....	.....
232	Mattresses.....	8	2	No recommendations.....	.....
233	Grain Elevator...	9	...	No recommendations.....	.....
234	Laundry.....	4	10	Provide a safety strip or bar in front of feed roll on ironing mangle, the said strip to extend the entire length of the roll; some suitable protection in front of feed rolls on collar and cuff machine....	Partially.
235	Sash, Doors, Blinds, etc.....	70	...	Provide suitable guards for three rip-saws and three jointers; substantial railing or casing around exposed part of fly-wheel in engine room; railing around hatchway; some protection at elevator openings on each floor. ....	Partially.
236	Laundry.....	6	5	Provide a safety strip or bar in front of feed rolls on ironing mangle, the said strip to extend the entire length of the roll .....	Complied.
237	Laundry.... ..	5	9	Cover set-screws and coupling on line shaft .....	Complied.
238	Sash, doors, etc....	110	...	Provide suitable guards for three rip-saws and jointers; case in shafting, pulleys, etc ; railing around opening of stairway and on stairs; substantial casing or railing around fly-wheel in engine room.....	Partially.
239	Sash, doors, etc...	35	...	Case in shafting, pulleys, etc.; case in bottom wheel of band-saw; provide suitable guards for rip-saws. ....	Not complied.
240	Mattresses, etc....	21	5	Cover gear-wheels on or about hair picker machine .....	Not complied.
241	Wagons and Gen. Repairing .....	20	...	Provide suitable guards for rip-saw and jointer; case in lower wheel of band-saw .....	Not complied.
242	Grain Elevator...	15	...	Cover set screws on shafting on first and top floors; extend railing the entire length of main driving belt on second floor.....	Not complied.
243	Sash, Doors, etc...	25	...	No recommendations.....	.....
244	Laundry.....	8	30	Provide a safety strip or bar in front of feed roll on ironing mangle, the said strip to extend the entire length of the roll; some suitable protection in front of feed rolls on collar and cuff ironer; repair and frequently disinfect water-closet .....	Partially.
245	Show Cases.....	12	...	Provide railing on stairway. ....	Complied.
246	Bakery .....	4	...	*Clean up and whitewash the shop.....	.....
247	Laundry.....	4	17	Provide a safety strip or bar in front of feed roll on ironing mangle, the said strip to extend the entire length of the roll; substantial railing or casing around fly-wheel in engine room; case in large belt operating through first floor.....	Not complied.
248	Wagons, Buggies.	50	...	Provide suitable guard for rip-saw; case in bottom wheel of band-saw; railing or casing around exposed part of fly-wheel in engine room. ....	Not complied.
249	Engines, Derricks	100	...	Provide substantial casing in front of bottom wheel of band-saw; case in shafting, pulleys, etc. ....	Complied.
250	Boxes .....	65	...	Provide suitable guards for rip-saws; case in bottom wheel of band-saw; railing or casing around fly-wheel in engine room; cover set screws; case in shafting, pulleys, etc.....	Partially.
251	Fire Proofing, etc.	40	...	No recommendations.....	.....

\*Gone out of business.

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
RAMSEY COUNTY—Continued.					
252	Paints, etc.....	24	3	*Provide substantial railing or casing around fly-wheel to engine; cover set screws; case in all belts where they operate through the floor.....	.....
253	Laundry.....	5	12	No recommendations.....	.....
254	Paper Boxes.....	7	13	Provide separate and distinct water-closet for female employes.....	Not complied.
255	Wooden B's, etc..	28	....	Provide suitable guards for rip-saws; case in shafting, pulleys, etc.; case in upper and lower part of siding saw; case in bottom wheel of band-saw.....	Complied.
256	Trunks.....	7	....	No recommendations.....	.....
257	Bakery.....	3	....	No recommendations.....	.....
258	Cigar Boxes.....	6	6	No recommendations.....	.....
259	Cigars.....	46	44	No recommendations.....	.....
260	Sash, Doors, etc..	450	....	Provide suitable guards for rip-saws and jointers; case in shafting, pulleys, etc.; railing around hatchway in box factory; case in bottom wheel of band-saw; provide guard for each emery wheel.....	Partially.
261	Crackers, etc....	36	16	Provide separate and distinct water-closet for female employes; a fire-escape with balconies on building.....	Partially.
262	Brass Goods, etc.	20	....	No recommendations.....	.....
263	Sash, Doors, etc..	45	..	Provide suitable guards for rip-saws and jointer; case in bottom wheel of band saw; case in shafting, pulleys, etc.; see that the bars are kept closed at elevator opening when not in use.....	Not complied.
264	Sash, Mouldings..	40	....	Provide suitable guard for jointer and rip-saw; case in bottom wheel of band-saw; substantial casing or railing around fly-wheel in engine room; case in pulleys and belts.....	Not complied.
265	Flour.....	14	....	Provide substantial casing or railing around fly-wheel in engine room; cover gearing and set screws.....	Partially.
266	Printing, etc.....	10	..	No recommendations.....	.....
267	Paper Boxes.....	6	20	No recommendations.....	.....
268	Printing, etc.....	15	3	Cover set-screws; cut off protruding keys on small presses.....	Partially.
269	Soap.....	35	15	No recommendations.....	.....
270	Flour.....	18	....	Provide substantial railing or casing around fly-wheel in engine room; bars at elevator opening on second floor.....	Complied.
271	Tobacco.....	10	25	Case in belts where they operate through first and second floors.....	Complied.
272	Butter.....	28	2	Provide a new cable for elevator; keep elevator doors closed when not in use.....	Complied.
273	Tinware.....	125	25	Cover gear-wheels on screw machine; thoroughly disinfect all the water-closets frequently.....	Complied.
274	Trunks.....	14	....	Provide suitable guard for rip-saw; substantial railing or casing around fly-wheel in engine room.....	Not complied.
275	Coffee, Spices, etc.	10	9	Case in belts where they operate through floors.....	Complied.
276	Mixed Paints, etc	22	3	Cover set screws on second and third floors.....	Not complied.
277	Clothing.....	60	150	Box shafting under sewing machine tables driving sewing machines.....	Not complied.
278	Laundry.....	8	34	Provide safety strips or bars in front of feed rolls on ironing mangles, the said strips to extend the entire length of the rolls; cover cog-wheels on shirt ironer; cover cog-wheels on or about collar and cuff ironer; case in pulleys and belts....	Complied.
279	Sash, Doors, etc..	45	....	Provide suitable guards for rip-saws and jointer; case in bottom wheel of band-saw; hood for cut-off saw; case in shafting, pulleys, etc.....	Partially.
280	Architectu'l Iron Work, etc.....	125	....	Provide a substantial railing or casing around fly-wheel in engine room; case in bottom wheel of band-saw.....	Partially.
281	Spices, Baking Powder, etc....	9	3	No recommendations.....	.....

\*Burned

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
RAMSEY COUNTY—Continued.					
282	Planed Lumber..	34	....	Provide suitable guard for rip-saw; hood for cut-off saw; case in shafting, pulleys, etc., in several places.....	Complied.
283	Boots and Shoes.	250	150	Provide substantial railing or casing around fly-wheel in engine room; case in main driving belt; cover set-screws; thoroughly and frequently disinfect water closets; box shafting under sewing machine tables driving sewing machines; separate and distinct water closets for female employes.....	Not complied.
284	Cigars .....	17	....	No recommendations.....	.....
285	Bookbinding.....	25	35	No recommendations.....	.....
286	Sash, Doors, etc..	44	....	Provide suitable guard for rip-saw and jointer; hood for cut-off saw; case in shafting, pulleys, etc.....	Partially.
287	Grain Elevator..	16	....	Cover set-screws; provide a stairway on the outside of cleaning house.....	Not complied.
288	Furniture .....	70	....	Provide suitable guards for rip-saws and jointer; railing or casing around fly-wheel; automatic (self-closing) gates at elevator opening; case in shafting, pulleys, etc.....	Complied.
289	Cigars.....	11	....	No recommendations.....	.....
290	Pants, Overalls, Shirts, etc.....	25	275	Box shafting under sewing machine tables driving sewing machines; cover set screws and couplings.....	Partially.
291	Furs.....	7	20	Provide separate and distinct water-closets for female employes.....	Not complied.
292	Cigars .....	6	....	No recommendations.....	.....
293	Furs.....	9	21	Whitewash the factory.....	Not complied.
294	Cigars.....	75	25	Thoroughly disinfect water-closets frequently.....	Complied.
295	Furs .....	3	7	No recommendations.....	.....
296	Cigars .....	20	2	No recommendations.....	.....
297	Car Repairing....	581	....	No recommendations.....	.....
298	Furs .....	6	29	No recommendations.....	.....
299	Crackers and Confectionery..	50	30	Provide substantial railing or casing around fly-wheel in engine room; case in belts operating through first and second floors; repair the elevator doors on second and third floors in candy department, and on third floor in cracker department; provide separate and distinct water-closets for female employes; cover set screws.....	Complied.
300	Cigars.....	7	....	No recommendations.....	.....
301	Printing, Blank Books, etc.....	69	18	Provide substantial railing or casing around fly-wheel in engine room; repair elevator trap doors on third floor.....	Partially.
302	Bakery.....	7	....	Clean the shop thoroughly and put in a new floor and thoroughly disinfect the water-closet frequently.....	Complied.
303	Furs.....	17	3	No recommendations.....	.....
304	Harness, Horse Collars, etc.....	68	28	Box shafting under sewing machine tables driving sewing machines.....	Complied.
305	Boots and Shoes.	300	200	Provide substantial railing or casing around fly-wheel in engine room; box shafting under sewing machine tables driving sewing machines; cover set-screws; thoroughly disinfect water-closets frequently, and have the closet on second floor repaired and put in good sanitary condition.....	Partially.
306	Confectionery....	8	9	No recommendations.....	.....
307	Furs .....	3	17	No recommendations.....	.....
308	Sash, Doors, etc.	16	....	Case in bottom wheel of band-saw; case in shafting, pulleys, etc.....	Complied.
309	Car Repairing....	450	....	Case in bottom wheel of band-saw; substantial railing or casing around fly-wheel in engine room; case in pulleys and belts.....	Complied.
310	Boots and Shoes.	155	55	Provide a railing or casing around exposed part of fly-wheel in engine room; case in the main driving belt in engine room; box shafting under sewing machine tables driving sewing machines....	Not complied.



No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
RAMSEY COUNTY—Continued.					
311	Furs.....	35	65	Erect substantial stairway from top floor to roof; remove obstructions in front of fire escapes.....	Complied.
312	Cigars.....	5	...	No recommendations.....	.....
313	Horse Collars....	40	1	Provide a substantial casing in front of bottom wheel of band-saw, and some suitable protection in front of top wheel; box shafting under sewing machine tables driving sewing machines.....	Complied.
314	Millinery.....	...	30	No recommendations.....	.....
315	Pants, Overalls, Shirts, etc.....	25	175	Box shafting under sewing machine tables driving sewing machines; repair men's closet and put in good sanitary condition.....	Complied.
316	Fur Coats, Gloves, etc.....	58	110	Box shafting under sewing machine tables driving sewing machines.....	Not complied.
317	Car Wheels, etc..	100	...	Provide substantial railing or casing around fly-wheel in engine room; suitable guard for rip-saw; case in bottom wheel of band-saw.....	Not complied.
318	Architectu'l Iron Work, etc. ....	60	....	Provide suitable guard for rip-saw.....	Not complied.
319	Fur Coats.....	40	60	Remove obstructions to fire escapes; provide a ladder from roof to adjoining building; repair the water closets and put them in good sanitary condition.....	Complied.
320	Shirts.....	3	10	Box shafting under sewing machine tables driving sewing machines.....	Not complied.
321	Furniture .....	45	....	Provide suitable guards for three rip-saws and wood shaper; substantial railing or casing around fly-wheel and engine; case in bottom wheel of band-saw, and some suitable protection in front of the top wheel; case in shafting, pulleys, etc., in several places, as explained by inspector; provide automatic trap doors for elevator; cover set-screws; belt shifters for all shift belts.....	Complied.
322	Overalls, Pants, etc.....	6	44	Box shafting under sewing machine tables driving sewing machines; provide separate and distinct water closets for female employees; thoroughly disinfect water closets frequently.....	Not complied.
323	Shirts.....	2	15	Box shafting under sewing machine tables driving sewing machines; case in main driving belt and pulley.....	Not complied.
324	Stoves & Ranges.	80	1	Provide substantial railing or casing around fly-wheel in engine room; case in belts operating through second floor..	Complied.
325	Car Repairing...	170	....	Provide substantial railing or casing around fly-wheel in engine room; case in bottom wheel of band-saw; cover set-screws .....	Partially.
326	Harness, Saddles	72	4	Box shafting under sewing machine tables driving sewing machines; cover set-screws and couplings.....	Not complied.
327	Laundry.....	15	67	Provide a safety strip or bar in front of feed rolls on two ironing mangles, the said strip or bar to extend the entire length of the rolls; suitable protection in front of feed rolls on two collar and cuff ironers; cover cog-wheels on or about collar and cuff ironer; substantial railing around exposed part of fly-wheel in engine room; case in belts operating through the floors.....	Partially.
328	Horse Collars....	18	....	No recommendations.....	.....
329	Car Repairing...	266	....	Case in bottom wheel of band-saw.....	Not complied.
330	Law Books, etc..	154	100	Provide a railing around the exposed part of fly-wheel in engine room; cover set-screws; securely cover exposed gearing on cylinder press; keep the gate at main entrance unlocked during working hours; better ventilation in composing room; thoroughly and frequently disinfect water-closets .....	Partially.
331	Harness, etc.....	45	5	No recommendations.....	.....
332	Shirts, Pants, etc.	20	105	Provide separate and distinct water-closets for female employees; box shafting under sewing machine tables driving sewing machines.....	Not complied.

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
RICE COUNTY.					
333	Sash, Doors, etc..	9	....	Case in lower wheel of band-saw; protection in front of top wheel; suitable guards for rip-saw and jointer; case in belts running through second floor.....	Not complied.
334	Woolen Goods....	16	8	Cover gearing in two different places; case in belt operating through floor.....	Not complied.
335	Furniture .....	60	....	Case in lower wheel of band-saw and some protection in front of top wheel; case in pulleys and belts; provide suitable guards for rip-saws.....	Partially.
336	Flour.....	3	....	Provide suitable protection for gearing on or about bolting chests.....	Not complied.
337	Wind Mills, etc..	12	....	Provide a suitable guard for rip-saw; case in lower wheel of band-saw and some suitable protection in front of top wheel .....	Partially.
338	Baby Carriages, etc .....	55	15	Case in lower wheel of band-saw and some protection in front of top wheel; case in pulleys and belts; suitable guard for rip-saw .....	Complied.
339	Furniture .....	60	....	Case in lower wheel of band-saw; provide safety strip or bar in front of feed roll on sander machine; box saws.....	Complied.
340	Flour and Cereal.	10	2	Securely cover gearing on bolting chests on third floor, and gearing on rollers on first floor; cover set-screws and couplings; case in belts.....	Partially.
341	Electric Light....	3	....	Provide suitable railing or casing on each side of fly-wheels and belts driving dynamos .....	Not complied.
SHERBURN COUNTY.					
342	Sash, Doors, etc..	8	....	Provide suitable guard for rip-saw; case in lower wheel of band-saw and suitable protection in front of the top wheel; suitable guard for jointer; case in lower part of resaw.....	Partially
343	Flour .....	7	....	No recommendations.....	.....
344	Starch .....	10	....	Provide substantial railing or casing around fly-wheel in engine room; case in pulleys and belts.....	Not complied.
345	Planed Lumber..	17	....	Provide substantial railing or casing around fly-wheel in engine room; suitable guard for rip-saw.....	Not complied.
STEARNS COUNTY.					
346	Flour .....	33	....	No recommendations.....	.....
347	Planed Lumber..	3	....	No recommendations.....	.....
348	Car Repairing ...	170	....	Provide substantial railing or casing around fly-wheel in engine room; case in lower wheel of band-saw; box cut-off saw; case in pulleys and belts .....	Complied.
349	Flour .....	4	....	No recommendations.....	.....
350	Sash, Doors, etc.	8	....	Provide suitable guards for rip-saws; case in lower wheel of band-saw and suitable protection in front of the top wheel.....	Not complied.
351	Machinery Re- pairing .....	10	....	No recommendations.....	.....
352	Plows, etc.....	15	....	Provide suitable guard for rip-saw; cover set-screws; substantial railing or casing around fly-wheel in engine room.....	Partially.
353	Sash, Doors, etc.	10	....	Provide suitable guard for rip-saw and jointer; case in lower wheel of band-saw; substantial railing or casing around fly-wheel in engine room.....	Not complied.
354	Sash, Doors, etc.	6	....	Provide suitable guard for rip-saw; case in lower wheel of band-saw.....	Not complied.
355	Fibreware.....	40	....	Cover set-screws; case in several pulleys and belts; cover the main shaft and gearing outside of building; cover gearing on wet machine; case in main driving belt.....	Partially.
356	Flour .....	6	....	Cover set-screws.....	Not complied.
357	Paper.....	10	2	*Cover gearing on paper machines, and gearing in two places on lower floor.....	.....

\*No report.

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
ST. LOUIS COUNTY.					
358	Bakery.....	2	...	No recommendations.....	.....
359	Engines and Mill Machinery.....	200	...	Provide substantial railing or casing around three fly-wheels; case in lower wheel of band saw; suitable guard for jointer; case in pulleys and belts.....	Partially.
360	Sash, Doors, Mouldings, etc.	140	...	Case in lower wheel of band-saw; provide suitable guards for rip-saws and jointers; cover set screws; case in pulleys and belts; substantial railing or casing around exposed part of fly-wheel in engine room; cover saws or refisher.....	Partially.
361	Bakery.....	4	...	No recommendations.....	.....
362	Sash, Doors, etc.	6	...	Provide suitable guard for wood shaper..	Complied.
363	Engines and Mill Machinery.....	150	...	*Provide substantial railing or casing around two fly-wheels.....	.....
364	Bakery.....	9	...	No recommendations.....	.....
365	Boots and Shoes.	37	3	No recommendations.....	.....
366	Lumber.....	200	...	No recommendations.....	.....
367	Laundry.....	2	15	No recommendations.....	.....
368	Ry. Cars.....	400	...	No recommendations.....	.....
369	Planed Lumber..	30	...	Case in pulleys and belts.....	Complied.
370	Grain Elevator..	6	...	*Cover set screws and couplings.....	.....
371	Laundry.....	1	6	Provide safety strip or bar in front of feed rolls on ironing mangle, the said strip to extend the entire length of the roll.....	Complied.
372	Lumber.....	100	...	No recommendations.....	.....
373	Sash, Doors, etc.	60	...	*Provide suitable guards for rip-saws and jointers; substantial railing or casing around fly-wheel in engine room; case in lower wheel of band-saw; provide a hood for cut-off saw; cover set-screws.....	.....
374	Laundry.....	2	5	*Cover cog-wheels on ironing mangle....	.....
375	Sash, Doors, etc.	50	...	Provide suitable guards for rip-saws; case in pulleys and belts; case in lower wheel of band-saw; cover set-screws; railing or casing around fly-wheel in engine room.	Partially.
376	Bakery.....	2	...	No recommendations.....	.....
377	Grain Elevator..	16	...	*Cover set-screws and couplings.....	.....
378	Laundry.....	6	20	*Provide a safety-strip or bar in front of feed-rolls on ironing mangle, the said strip to extend the entire length of the roll.....	.....
379	Bakery.....	4	...	No recommendations.....	.....
380	Gold, Silver and Nickel Plating.	6	...	Cover set-screws and case in pulleys and belts.....	Complied.
381	Lumber.....	45	...	Case in the balance of fly-wheel in engine room.....	Not complied.
382	Grain Elevator..	10	...	*Cover set-screws and couplings.....	.....
383	Flour.....	125	...	*Cover set-screws.....	.....
384	Laundry.....	3	15	No recommendations.....	.....
385	Lumber.....	150	...	Provide a substantial railing or casing around fly-wheel in engine room; and case in pulleys and belts, both in planing mill; cover set-screws in saw mill...	Partially.
386	Machinery, etc.	30	...	No recommendations.....	.....
387	Laundry.....	3	9	*Cover rolls on ironing mangle; cover cog-wheels on shirt ironer.....	.....
388	Grain Elevator..	20	...	*Cover set screws and couplings.....	.....
389	Lumber.....	110	...	Provide a substantial railing or casing around fly-wheel in engine room; case in pulleys and belts and cover set-screws, all in planing mill; also cover set screws in saw mill.....	Partially.
390	Laundry.....	5	20	*Provide a safety strip or bar in front of feed rolls on two ironing mangles, the said strip to extend the entire length of the rolls.....	.....
391	Flour.....	20	...	*Cover set screws and couplings; railing or casing around fly-wheel in engine room.	.....
392	Sash, Moldings, etc.	17	...	Provide suitable guards for rip-saws and jointer; case in lower wheel of band-saw; case in belts operating through second floor; hand-rail on stairs..	Partially.
393	Arch'tl iron work	35	...	No recommendations.....	.....

\*Assigned.

\*\* No report. #Closed.



No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
ST. LOUIS COUNTY—Continued.					
394	Sash, doors, etc...	28	...	Provide suitable guards for rip-saw and jointer; railing or casing around fly-wheel in engine room; case in lower wheel of band saw.....	Not complied.
395	Bakery.....	5	...	No recommendations.....	.....
WABASHA COUNTY.					
396	Planed lumber..	5	...	No recommendations.....	.....
397	Flour.....	6	...	Provide a substantial railing or casing around exposed part of fly-wheel in engine room; cover gearing on bolt'g chests	Not complied.
398	Wagons .....	28	...	Case in lower wheel of band-saw and some suitable protection in front of top wheel; suitable guard for wood shaper and rip-saws; case in pulleys and belts.	Partially.
399	Machinery and Repairing.....	10	..	No recommendations.....	.....
400	Flour.....	21	...	Provide a substantial railing or casing around exposed part of fly-wheel in engine room; railing at head of stairs on fifth floor.....	Complied.
401	Sash, Doors and Mouldings.....	10	...	Case in lower wheel of band-saw and some suitable protection in front of top wheel; case in pulleys and belts; railing or casing around exposed part of fly-wheel in engine room.....	Partially.
WASHINGTON COUNTY.					
402	Lumber.....	52	...	Provide a substantial railing or casing around two fly-wheels in engine room; cover set screws and couplings.....	Partially.
403	Lumber.....	150	...	Provide railing around the exposed part of fly-wheel in engine room; box two cut-off saws; cover set screws and couplings; case in main driving belt.....	Partially.
404	Sash, Doors, Blinds, etc.....	59	...	Case in lower wheel of band-saw; suitable protection at elevator opening on second floor; suitable guards for rip-saws and jointer.....	Partially.
405	Flour .....	30	...	Provide suitable protection for gearing on bolting chests on fourth and fifth floors; case in belts operating through floors and cover set-screws .....	Complied
406	Lumber.....	80	...	Cover set-screws and gearing .....	Complied.
407	Lumber.....	80	...	Provide a substantial railing or casing around two fly-wheels in engine room; box two cut off-saws; hand rail on stairs; cover gearing in several different places.....	Complied.
408	Corn Meal, etc...	5	...	Provide substantial railing or casing around fly-wheel in engine room.....	Not complied.
409	Lumber.....	125	...	No recommendations.....	.....
410	Electric light....	6	...	Provide substantial railing or casing around two fly-wheels in engine room..	Complied.
411	Cooperage.....	21	...	No recommendations.....	.....
412	Flour.....	14	...	Provide suitable protection for gearing on bolting chest on second floor; cover set-screws.....	Not complied.
413	Sash, Doors, Blinds, etc.....	20	...	Provide substantial railing or casing around fly-wheel in engine room; case in lower wheel of band-saw and some suitable protection in front of top wheel; cover set screws and couplings; case in pulleys and belts; provide belt-shifters for all shift-belts.....	Complied.
414	Planed Lumber..	10	...	Provide substantial railing or casing around fly-wheel in engine room; case in lower part of resaw.....	Complied.
415	Lumber.....	90	...	Cover gearing; substantial railing or casing around fly-wheel in engine room; cover set-screws and couplings.....	Partially.
416	Lumber.....	150	...	Cover set-screws and couplings.....	Not complied.
417	Hosiery, Underwear, etc.....	7	48	*Provide substantial railing or casing around fly-wheel in engine room; cover set-screws.....	.....
418	Buggies, etc.....	35	...	Provide suitable guard for rip-saw; case in pulleys and belts; case in lower wheel of band-saw; substantial railing or casing around fly-wheel.....	Not complied.

\*Removed.

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
419	Mattresses, Bed Springs, etc....	7	3	WASHINGTON COUNTY— <i>Continued.</i> Provide suitable guard for rip-saw; hand-rail on stairs; suitable protection for elevator opening on second floor.....	Not complied.
420	Road Carts, Carriages, etc.....	10	....	*Case in lower wheel of band-saw .....	.....
421	Carriages.....	70	....	†Provide substantial railing or casing around fly-wheel in engine room .....	.....
422	Wagons, etc.....	36	....	WINONA COUNTY. Provide suitable guards for rip-saw and jointer; case in lower wheel of band-saw; railing around exposed part of fly-wheel in engine room; suitable guard for wood shaper; case in pulleys and belts; provide automatic gates for elevator .....	Partially.
423	Boots and shoes..	20	5	Box shafting under sewing machine tables; railing or casing around fly-wheel in engine room.....	Not complied.
424	Laundry.....	5	15	Cover exposed gearing on collar and cuff ironer; provide a safety strip or bar in front of feed roll on ironing mangle, the said strip to extend the entire length of the roll; railing or casing around fly-wheel in engine room; cover gearing on ironing mangle.....	Complied.
425	Lumber, Sash, Doors, etc....	335	....	Case in pulleys and belts in several places; provide suitable guards for rip-saws, jointer and wood shaper; cover gearing on sander machine; railing at head of stairs; provide a new cable for elevator; belt-shifters for all shift-belts—all in factory; cover hatchway; case in pulleys and belts and cover gearing; cover set screws and couplings—all in saw mill.....	Complied.
426	Cooperage.....	22	....	Provide suitable protection around cut-off saw; railing or casing around fly-wheel in engine room.....	Complied.
427	Grain elevator...	7	....	Provide a substantial railing or casing around fly-wheel in engine room.....	Not complied.
428	Lumber, Sash, Doors, etc.....	200	....	Provide suitable guards for rip-saws and jointer; hood for cut-off saw; case in belts operating through floor; cover relisher saws; cover set-screws and couplings..	Not complied.
429	Cooperage.....	5	....	No recommendations.....	.....
430	Wagons and Sleighs.....	125	....	Provide suitable guards for rip-saws and wood shapers; case in lower wheel of band saw; hood for cut-off saw; case in pulleys and belts in several places; provide new cables for two elevators; railing around exposed part of fly-wheel in engine room.....	Partially.
431	Flour.....	60	....	No recommendations .....	.....
432	Electric Light...	5	....	Provide substantial railing on each side of fly-wheels and belts running dynamos .....	Complied.
433	Lumber, Sash, Doors, etc.....	300	....	Provide suitable guards for rip-saws and jointer; hood for cut-off saw; cover set-screws and couplings; cover shingle saws; case in pulleys and belts; railing or casing around fly-wheel in engine room.....	Partially.
434	Sash, Doors, etc..	16	....	No recommendations .....	.....
435	Car Repairing ...	160	....	Case in lower wheel of band-saw and some protection in front of the top wheel; case in pulleys and belts .....	Complied.
436	Fiberware.....	40	....	Cover set-screws and couplings; case in belts operating through floor.....	Partially.
437	Engines, castings, etc.....	12	....	No recommendations .....	.....
438	Lumber, Sash, Doors, etc.....	300	....	Provide hood for cutoff saw; case in main driving belt; railing or casing around two fly-wheels; box in two trimmer-saws; cover set-screws and couplings; suitable guards for rip-saws, jointer and wood-shaper; case in lower wheel of band-saw; cover saws and knives on dove-tail machine; hand-rails on both stairs; cover knot-saws.....	Partially.

\*Removed. †Assigned.

No.	Goods Manufactured.	No. Empl'd		Recommendations made.	Compliances.
		M.	F.		
WINONA COUNTY—Continued.					
439	Carriages.....	6	...	No recommendations.....	.....
440	Baby Carriages..	20	...	No recommendations.....	.....
441	Sash, Doors, etc..	110	...	No recommendations.....	.....
442	Cigars.....	11	4	No recommendations.....	.....
443	Wagons, Sleighs..	20	...	Case in lower wheel of band-saw, and some protection in front of the top wheel; railing or casing around fly- wheel in engine room.....	Complied.
444	Flour.....	5	...	Cover set-screws; hand-rail on stairs; provide some better way for oiling shaft- ing.....	Partially.
445	Flour.....	4	...	No recommendations.....	.....

## CHAPTER III.

### ACCIDENTS

During the time in which the Bureau has systematically inspected factories, an effort has been made to secure an account of all accidents occurring in the establishments visited. The results obtained are not in all respects satisfactory. There is no law requiring factory owners to report accidents to the Bureau when they occur. And when some time has elapsed since the date of any casualty, the average factory owner always thinks your question does not apply to the accidents in his establishment. He has a desire to conceal from the public a knowledge of injuries to his workmen. Quite a number of accidents referred to in this report came to the knowledge of the Bureau through the public press. The employer had reported "no accidents." The newspapers had given an account of a casualty. Inquiry among the workmen and physicians confirmed the papers. It showed the desire of quite a number of employers to keep back certain facts asked for by this Bureau in their blanks. Possibly this reluctance about giving details of accidents was due to a fear of personal damage suits in case the facts should come by chance to the knowledge of lawyers. Whatever the motive the fact is as above stated. Inquiry in other states discloses the same state of affairs, unless every accident is by law required to be reported to some state authority at the time when it occurs.

Owing to this reluctance or neglect of employers to report accidents in their establishments the accompanying list is far from perfect. Of the fatal and the more serious accidents it is probable that this list is a more or less fair exhibit. Of the minor injuries to workmen this can not be said. This list has been compared with the list of accidents for which various insurance companies doing business in Minnesota have made payments during the past year. This comparison shows that the smaller casualties in Minnesota factories are from six to ten times as numerous as would be indicated by the table which



sums up our researches in this field. The accompanying list of accidents is presented, then, not as a complete exhibit of the same in Minnesota. Its purpose, rather, is to show, if possible, what proportion of the casualties of Minnesota factories could be avoided by the use of proper safety appliances.

The officers of this Bureau, in collecting the data herein given, dealing with the subject of factory inspection, were engaged about a year and a half. They have, however, included in this report such casualties as have become known to them as happening during the two years ending Sept. 1, 1892. The number of establishments visited by the Inspector was 445. Of that number 172 were found in which accidents had occurred. Under list of accidents, in this chapter, will be found a statement giving all the details relating to these accidents which are known to this Bureau. Tables I, II and III present various summaries relating to the nature and causes of the same.

TABLE I.

## SUMMARY OF ACCIDENTS.

Nature of Injury.	Number of Accidents.
Causing death.....	26
Amputation of hand or arm.....	10
Amputation of part of hand, as finger, etc.....	67
Amputation of leg or foot.....	2
Fracturing limb or bones of trunk.....	17
Injury to head or face.....	6
Lacerations not given above.....	146
Total.....	276

[ Of the accidents included in the foregoing table, some were of a character which no known guard, device, or precaution could have prevented. Concerning others of these casualties not enough facts were learned to justify any conclusion. They may have been unavoidable or the opposite. In tables II and III these are included with those known as unavoidable, under the head of "Unavoidable and unknown." Carelessness, heedlessness, and thoughtlessness are factors which play a part in the great mass of casualties. In reporting accidents employers are wont to give one of these as the cause of most of the cases mentioned by them. This Bureau does not, in tables II and III, thus use the term carelessness. If a guard could have been provided by the employer, which would have prevented the accident, whether the workman was careless or not, the use of the guard and not the greater care by the employe is considered in tabulating the methods by which the casualties could have been avoided. It is here assumed that carefulness and thoughtfulness as duties, begin with the factory owner in building and furnishing his mill with machinery. The sphere for care and thought, on the part of the workman, begins only where that of the master ends. The employer cannot honestly or consistently charge anything to the neglect or carelessness of an employe, that he himself could have prevented by the

introduction and use of proper guards to his buildings and their appliances. The employer has no moral or legal right of asking or even allowing a man, woman, or child to work in his establishment, until it can be said of that establishment, that no reasonable guard or precaution for preventing accidents has been neglected or omitted. When that has been done and a person by carelessness has been hurt, then, and not till then, has the employer or the public the right of ascribing the casualty to the carelessness of the workman as its cause. This is the principle which has been followed in classifying the foregoing accidents, and stating of twenty-four of them that they could have been avoided by the use of greater care on the part of the operator.

Again, in the preparation of tables II and III, some accidents have been tabulated under more than one head. Thus, if a child has been hurt, while operating any dangerous and unguarded machinery, it is referred to twice. It is marked as preventable by the use of the guard for the machine at which he was engaged at labor. It is also catalogued as preventable by the non-employment of children at dangerous occupations. The same double classification is used in some other cases, making a total of eighteen thus duplicated.

TABLE II.  
ACCIDENTS—HOW PREVENTED.

By use of rip-saw guard.....	54
By use of jointer guard.....	37
By guarding wood shapers.....	16
By guarding gearing.....	11
By guarding ironing mangles in laundries.....	13
By guarding collar and cuff machines.....	2
By guarding set-screws.....	7
By guarding shafting.....	10
By guarding fly-wheel.....	5
By guarding keys for collars, etc.....	1
By guarding coupling.....	3
By guarding emery wheels.....	2
By guarding hatchways, holes, etc.....	3
By stopping or slacking machinery to put on belts.....	5
By use of automatic elevator doors.....	3
By use of lock attachment for elevators.....	3
By use of reliable safety-catch for elevators.....	2
By keeping conveyors covered.....	3
By using sound floors, wheels and pulleys.....	3
By not cleaning machinery in motion.....	2
By non-employment of children at dangerous occupations.....	12
By use of greater care by operator.....	24
Unavoidable and unknown.....	73
Total.....	294
Less duplications.....	18
Number of accidents.....	276

In "list of accidents" is presented, by establishments, an account of all the casualties in factories which are known to this Bureau. In that list each of 172 different establishments are referred to by number. Table III is arranged to facilitate a study of those accidents by causes such as are summarized in table II. Under each head references are made to the establishment, in the list, in which will be found an account of the accidents which could have been avoided by the guard or precaution stated. Thus, two accidents could have been avoided by the use of guards for collar and cuff machines in laundries. The accidents referred to, as thus preventable, will be found mentioned in establishments 52 and 138 in the list. The same for each of the causes tabulated in table III.

TABLE III.

## ACCIDENTS—HOW PREVENTED—BY ESTABLISHMENTS.

By use of rip-saw guard:—3, 10, 12, 19, 21, 24, 27, 28, 30, 36, 38, 41, 43, 49, 54, 67, 70, 71, 73, 75, 79, 80, 84, 94, 95, 97, 106, 111, 126, 127, 129, 132, 134, 144, 146, 158, 168, 169.

By use of jointer guard:—3, 19, 21, 43, 55, 68, 76, 90, 91, 101, 103, 106, 107, 118, 120, 134, 135, 142, 144, 145, 150, 152, 153, 158, 166, 168, 169, 172.

By guarding wood shapers:—22, 28, 65, 66, 73, 80, 105, 106, 113, 120, 124, 142, 146, 148.

By guarding gearing:—5, 6, 17, 45, 51, 62, 72, 83, 98, 131, 157.

By guarding ironing mangles in laundries:—47, 50, 59, 63, 96, 100, 102, 110, 125, 138, 141, 143.

By guarding collar and cuff machines in laundries:—52, 138.

By guarding set screws:—4, 29, 36, 106, 117, 136, 140.

By guarding shafting:—8, 9, 56, 108, 122, 133, 147, 151, 161, 163.

By guarding fly-wheel:—14, 18, 89, 99, 164.

By guarding keys for cellars, etc.:—32.

By guarding couplings:—86, 119, 131.

By guarding emery wheels:—45, 78.

By guarding hatchways, holes, etc.:—58, 61, 139.

By stopping or slacking machinery to put on belts:—1, 40, 48, 64, 99.

By use of automatic elevator doors, etc.:—46, 60, 93.

By use of lock attachments for elevators:—16, 93, 112.

By use of reliable safety-catch for elevators:—37, 123.

By keeping conveyors covered:—16, 74, 167.

By using sound floors, wheels and pulleys:—65, 72, 130.

By not cleaning machinery in motion:—102, 131.

By non-employment of children at dangerous occupations:—87, 88, 89, 94, 98, 125, 126, 127, 131.

By use of greater care by operator:—9, 11, 26, 39, 42, 43, 49, 58, 77, 104, 114, 116, 157, 160, 161, 171.

## LIST OF ACCIDENTS.

## ANOKA COUNTY.

1. Sash, Door and Blind Factory: A man was endeavoring to throw off a large belt with a stick. The stick broke and he fell into the pulley, which was on the floor. He lived about twenty minutes.

2. Flour Mill: Man had his hand hurt by getting it caught in a chain drive two different times. Not serious.

3. Sash, Door and Blind Factory: Man cut four fingers off on a jointer. Another man slightly hurt by knot flying from a machine. Man had finger cut off on rip-saw.

## BLUE EARTH COUNTY.

4. Flour Mill: A man was caught by a set screw while watching another put on a belt. He leaned over the shaft and the screw caught his shirt sleeve. His shoulder was dislocated, and his arm was badly cut. If the



machinery had not been stopped he would have been killed. He was the proprietor of the mill.

5. Fiberware Factory: A girl was caught in a large gearing and disemboweled. A boy's arm was dislocated at the shoulder. In fixing a pulley he was caught by a belt.

6. Flour Mill: Man lost two fingers by having his hand caught in gearing on bolting chest.

7. Machine Shop: Man had his fingers hurt and another man had his foot hurt.

8. Creamery Package Factory: Man was caught on shafting and his arm was broken. He went up on a ladder to throw resin on a pulley. Several accidents have happened here, especially to boys getting cut on saws.

#### CARLETON COUNTY.

9. Saw Mill: Man was sewing a small belt when his jacket became caught by a shaft. He died from the effects of his injuries shortly after. Six men were on a high scaffold fixing a wood burner. The scaffold broke, and they all fell to the ground. All of them were more or less injured, one having his back broken. A circular saw broke and a piece of it hit a man on the arm cutting it off. Another man had a large piece of flesh cut out of his arm from being hit by a piece of it. Man had his thumb cut off on a circular saw used for cutting shingle blocks. After he got better he went to work again, and it was not long after until he cut off three fingers on the same hand.

10. Planing Mill: Man was killed running a rip-saw. The board he was ripping got on the saw, and flew back and hit him on the head killing him instantly.

11. Saw Mill: Man had his foot cut off on a slasher saw. He slipped. Man had his leg broken by letting a pulley fall on it. Man had his leg broken by joists falling on it while he was loading a car.

#### CROW WING COUNTY.

12. Planing Mill: Board got on rip-saw, flew back and hit the operator in the ribs. He was knocked senseless. He was laid up two months.

#### DAKOTA COUNTY.

13. Mill Machinery Works: Engineer had his hand quite badly hurt turning fly-wheel.

14. Packing House: The fireman fell into the fly-wheel. His arm was broken in two places, and he was otherwise injured. He was laid up fully three months; indeed, it is a wonder he was not killed.

15. Saw Mill: Man had his hand badly cut on a slasher saw.

16. Packing House: Man stepped into a conveyor and his foot was slightly injured. Man fell down elevator shaft. Somebody run the elevator from the floor where he had left it, and he, thinking the elevator still there, stepped into the shaft. His leg was broken and he was otherwise injured.

17. Flour Mill: Man lost his arm by being caught in a gear. He was cleaning out a spout when his shirt sleeve was caught in the gear, pulling in his arm.

18. Grain Elevator: Man fell into fly-wheel and was killed. No one was present at the time. It is supposed he slipped. When found he was lying near the wheel. His brains were scattered all over.

#### GOODHUE COUNTY.

19. Furniture Factory: Man lost his right hand, except part of little finger, on a rip-saw. His hand fell on the saw while ripping a board. Man had part of four fingers cut off on jointer.

20. Iron Works: Man had thumb and finger smashed in a lathe.

21. Furniture Factory: Man had his thumb cut off on a rip-saw. Man had finger cut off on a jointer. Another man lost part of finger on jointer. Man had three fingers badly cut on a rip-saw.

22. Sash, Door and Blind Factory: Man had finger cut off operating a wood shaper.

## HENNEPIN COUNTY.

23. Candy Factory: A boy had his arm broken and otherwise badly injured on elevator. He was in the basement when he got on the elevator and started it. His coat was caught by the wire rope, and he was pulled to the drum.

24. Sash, Door and Blind Factory: Man running rip saw cut his thumb very badly. His thumb will always be stiff.

25. Woolen Mill: A boy, between twelve and fourteen years of age, had his hand caught in the rolls of a carding machine. The flesh was torn off the arm and hand. He is still in the hospital, and the doctors are in hopes of saving the arm.

26. Furniture Factory: A boy, about fourteen years old, was fooling and putting his hand on the rolls of the sander machine. He lost one of his fingers.

27. Sash, Door and Blind Factory: Man had his thumb and index finger cut off running rip saw. There were several others cut or hit by a board from this same saw.

28. Sash, Door and Blind Factory: Man had one finger cut off running wood shaper. Another man had two fingers cut off running rip saw.

29. Flour Mill: While oiling the oilers shirt was caught by a set screw. He was whirled around the shaft and clothes torn off him. He was badly injured.

30. Show Case Factory: A man, while running rip-saw, was hit in the side by the piece of board he was ripping. The piece got on the saw, and it flew back with terrible force. He only lived about twenty-four hours.

31. Saw Mill: Man had his foot badly cut on a cut-off saw. He was pushing away some edgings, when his foot slipped against the saw.

32. Electric Light Plant: The engineer, while oiling elevator drums, was caught by a key. The man running the elevator heard him cry for help, and had he not stopped the elevator he would have been killed.

33. Shingle Mill: Man had part of little finger cut off on cut-off saw, and another man had part of thumb cut-off on the same saw.

34. Flour Mill: Man, in some way, put his foot in a conveyor, and it was badly cut.

35. Paper Box Factory: One girl had two fingers mashed on stay machine, necessitating the amputation of the ends. Another girl had three fingers on each hand pinched on pressing machine.

36. Saw Mill: While lacing a belt a man lost one of his fingers. The string was around his finger and it was caught by a set-screw and pulled his finger off. A board got on saw, flew back, hit a man and killed him.

37. Overall and Shirt Factory: Elevator fell from top floor to basement. The man who operated it was on it at the time. He was badly injured, but Inspector did not learn to what extent.

38. Sash, Door and Blind Factory: A man cut part of three fingers off on a rip-saw. He slipped and his hand fell on the saw.

39. Saw Mill: Man had arm badly cut on a slasher saw. He was fooling with another man and was pushed on the saw.

40. Flour Mill: While putting on a belt a man had his arm broken.

41. Sash, Door and Blind Factory: A man running rip-saw was hit in the eye by a piece which got on the saw and flew back.

42. Shoe Factory: Man had finger cut off on pricking machine, and a girl had her toes bruised going up on the elevator. Her toes were caught between floor and elevator platform.

43. Furniture Factory: One fatal accident to operator on rip-saw. Boy had fingers cut on rip-saw, and another one had his fingers cut on jointer. Another boy, between fourteen and fifteen, was killed. A belt was hanging on the main shaft near a coupling. The boy sat in the belt to swing. The belt became caught by the bolts in the coupling, and the boy was pulled up and whirled around the shaft several times, each time his limbs striking the beams. He was frightfully mangled when he fell to the floor, and he died in about an hour afterwards.

44. Flour Mill: Man had his hand caught in rolls, badly smashing his hand and taking off four of his fingers.



45. Saw Mill: Two men were slightly cut with edging saws. One man had his fingers caught in some gearing, but he only received slight injury. By the bursting of an emery wheel a man was very badly injured. A piece of the wheel struck him on the chin breaking the jaw bone. Another man was hiding his jacket just before quitting time, and in so doing he put his hand on a saw, which he did not see, very badly cutting his hand. There were two or three other slight accidents.

46. Rattan Factory: A man opened the door of an elevator and walked into the shaft, thinking he was going into a room. He fell one story. Both of his legs were broken.

47. Laundry: While fixing or running a collar and cuff ironer, a man had his hand caught between the feed rolls. His arm was drawn in up to the elbow, and as the rolls were very hot the flesh was burned frightfully, and his fingers were crippled. I was told he became insane.

48. Saw Mill: Man had part of thumb cut off on a cut-off saw. Man had his arm broken putting on a belt. Man was killed by a load of lumber falling on him. A couple of fingers were cut on saws.

49. Planing Mill: A board got on rip-saw and flew back hitting a man in the stomach. The breath was knocked out of him, but he was not badly injured. He was laid up two or three days. A man had two fingers cut off on a siding saw. He was cleaning away the saw dust from under it when his hand struck the saw. He thought the saw was stopped.

50. Laundry: Girl had her fingers pinched on a bosom ironer. Slight. Girl had her hand caught between feed rolls of ironing mangle. The flesh on her hand was badly burned. She did not loose any fingers.

51. Saw Mill: A boy was cleaning out conveyor with a stick. The stick became caught in the conveyor and struck him in the stomach. He was not badly injured. Man had his foot caught in a gear badly bruising it.

52. Laundry: Two girls had their hands caught between the rolls of collar and cuff machine. Did not learn extent of injury.

53. Planing Mill: By the breaking of a pulley a man was killed, a piece of which struck him.

54. Furniture Factory: Man cut his fingers on a rip-saw. A piece of board, which the operator was ripping, got on the saw, and flew back and hit him in the stomach. His hand also fell on the saw badly cutting it, and the thumb and one of his fingers had to be amputated. Another man lost his hand on a rip-saw.

55. Sash, Door and Blind Factory: Man had his finger cut off on a jointer. His hand slipped into the knives.

56. Saw Mill: Man had his toes cut off on a slasher saw. He put his foot on the saw while fixing something near it. Another man was caught on a shaft while oiling. His arm was badly hurt. There were three other slight accidents, but did not learn what they were.

57. Linen Mill: A boy, under fourteen, had his hand caught between rollers of a card machine, and it was badly smashed. It is thought his hand will be always stiff.

58. Saw Mill: While at work a man fell into a hole. He died from the effects of his injuries. The sawyer let the carriage get away from him, and one of the men fell off badly hurting his knee. Laid up three weeks. Man was caught on shaft while oiling, and he was held between shaft and post. Three of his ribs were broken, and he was otherwise mutilated.

59. Laundry: Girl had hand caught in rolls of ironing mangle. Her hand was bruised and badly burned.

60. Confectionery Factory: A boy was looking in the elevator shaft, and while in that position the elevator came down and struck his head tearing off some of the scalp.

61. Paper Mill: A man fell into a hatchway. He was laid up ten days.

62. Flour Mill: Man had two fingers taken off by his hand slipping into gearing on bolting chest.

63. Laundry: Girl had her hand caught in feed rolls of ironing mangle. No bones were broken, but her hand was badly burned. Her hand is a little stiff, and always will be. Another girl had her hand caught in the same mangle.



64. Saw Mill: A man was killed while putting on a belt. Another man was badly injured in the same way. The pulley broke and hit him. His arm had to be amputated.

65. Casket Factory: Man running wood shaper had thumb cut off and a finger badly cut. Another man while running wood shaper had a thumb and finger cut off, and his hand badly cut. Both happened by his hand slipping into the knives.

66. Car Works: Man had his hand badly cut operating a wood shaper.

67. Trunk Factory: Man had tops of two fingers cut off running rip-saw. A piece got on the saw and flew back and hit the foreman.

68. Furniture Factory: Man had top of thumb cut off while operating a jointer.

69. Flour Mill: A man was drowned while fixing water wheel. He was standing on the wheel when the water started it, which threw him in the water.

70. Sash, Door and Blind Factory: Man had his fingers cut on a rip-saw.

71. Mill Machinery Maker: Man had finger cut off on rip-saw.

72. Flour Mill: A man was caught in gearing on bolting chest and killed. His coat was caught and pulled him in. A man fell through the floor. The boards covering a hole were rotten, and when he stepped on them they broke and he fell through badly hurting his hip. Laid up six months.

73. Furniture Factory: Man had a finger cut off on a rip-saw, and shortly after had his thumb cut on a wood shaper.

74. Flour Mill: Man had his foot caught in a conveyor. The flesh was torn off and the foot badly smashed. He was not an employe of the mill, being sent there to do some work.

75. Wooden Box Factory: One finger cut off on a rip-saw.

76. Sash, Door and Blind Factory: Man had a finger badly cut on jointer.

77. Flour Mill: Man fell in hatchway. Both of his arms were broken. He backed into it after opening it. He was not in the employ of the company.

78. Harvester Works: Man was killed by being cut with a saw. Another man was killed by the bursting of an emery wheel.

79. Saw Mill: A board flew back from saw and hit a man in the stomach. He died shortly after. A belt broke and hit a man on the leg. He was laid up some time.

80. Sash, Door and Blind Factory: Man had his thumb cut on rip-saw, and another had two fingers cut on a wood shaper.

#### MORRISON COUNTY.

81. Saw Mill: Man's finger slightly cut on a trimmer saw.

82. Saw Mill: Man had two fingers cut off on a trimmer saw.

83. Saw Mill: Man had his jacket caught in a gear and it was torn off him, and also his shirt. He received a slight flesh wound on the neck. Luckily, they were just shutting down for the day, or he would have been badly hurt. Man had his thumb badly cut on a shingle saw.

#### NICOLLET COUNTY.

84. Furniture Factory: Man had part of thumb cut off on a rip-saw.

#### RAMSEY COUNTY.

85. Tobacco Factory: Man, while roughing a grinding stone, badly cut the back of his hand. His hand slipped. He did not have the use of it for about five weeks.

86. Soap Factory: Man working nights reached up to the shafting with a wrench to tighten a bolt which was loose. His sleeve was caught by a coupling, and he was whirled around the shaft several times. The shafting revolved slowly. He hung to it and cried for help, but in vain. He realized he was getting dizzy, and something had to be done. He let go his hold and fell to the floor. His leg was broken, and otherwise injured. He was laid up a long time. It was a miraculous escape. Luckily, there

was space enough between the shaft and ceiling for him to go around. Otherwise, he would have probably been killed.

87. Printing Office: Boy, while feeding small press, had his finger cut.

88. Paper Box Factory: Three girls, between fourteen and sixteen years of age, had top of index finger cut off on what is called a staying machine, while operating the same.

89. Printing Office: A boy, about sixteen years old, employed in the press room, was killed by being caught in fly-wheel to a gas engine. The wheel must be turned to start the engine. He was turning the wheel when he was caught.

90. Sash and Door Factory: Man had finger cut on jointer, while jointing a piece.

91. Sash and Door Factory: One man had two fingers cut off on jointer and another had top of finger cut off on jointer.

92. Sash and Door Factory: A man had fingers cut off.

93. Trunk Factory: A boy fell two stories in elevator shaft. He opened the door on the third floor, raised the bar, and walked into the shaft, thinking the elevator platform was still where he had left it. Did not learn the extent of his injury, but he was badly shaken up. A clerk in the store, while showing a customer some trunks, backed into the elevator shaft. He fell from first floor to basement. The door was left open. He was not hurt, but badly frightened.

94. Box Factory: A boy, about fifteen years old, had his little finger cut off by getting his hand in a matcher. The flesh on his arm was torn off. A man had index finger cut off on rip-saw, while ripping a board. A brother of the proprietor had three fingers cut off by getting his hand in a matching machine, and the fourth finger was so badly cut that it will always be stiff.

95. Box Factory: Several boys had their fingers cut off on rip-saws. A boy threw a piece at another boy. The piece fell on rip-saw and flew back and hit the operator in the eye. He did not lose his eye, but it was very sore for some time. While ripping a board the piece got on the saw and hit the foreman in the face. Was not much hurt.

96. Laundry: While operating an ironing mangle a girl had her hand caught between the feed rolls. Her hand was badly burned. She will never have the use of three of her fingers.

97. Sash and Door Factory: Man had finger cut off on rip-saw while ripping a board.

98. Mattress Factory: A small boy got his hand in cog-wheels of hair picker. No one seems to know just how it happened. It is supposed he was putting on a small belt when his hand was caught. His arm had to be amputated just below the elbow. Another boy's hand was caught in feed rolls of same machine. His hand was very badly cut. Strange, he did not lose any of his fingers, but one of them will always be stiff.

99. Sash and Door Factory: A man, while putting on a belt, was killed. His sleeve, in some way, was caught in the pulley. He was whirled around the shafting several times. His arm was pulled out of the socket. He fell to the floor, and he died soon after. Another man fell into the large fly-wheel and was killed. The wheel is entirely boxed in, and at one end there is a door so that the engineer can go in to oil the bearings. The man killed was a laborer in the yard. He went inside and shut the door to hide from the boss. No one saw him fall into the fly-wheel, but when found he was dead. Another man, while operating a rip-saw, was hit in the stomach. The piece he was ripping got on the saw, and flew back with terrible force. He died from his injuries. Two other men had fingers cut on rip-saw.

100. Laundry: Girl, while operating ironing mangle, had her fingers on one hand slightly pinched by getting her hand between the feed rolls. The foreman happened to be standing near the mangle, and he at once threw off the belt. Had the belt not been thrown off, it would, no doubt, have been a very serious accident.

101. Sash and Door Factory: Two men had each a part of a finger cut off on jointer, while running same.

102. Laundry: A girl, while cleaning the collar and cuff ironer, had her hand caught between the feed rolls, and her arm was drawn in almost



to the shoulder. Her arm was broken in two places. Lucky the rolls were not hot, or the flesh on her arm would have undoubtedly been burned to the bone. At last accounts she was still in the hospital. Another girl, while operating an ironing mangle, had her hand caught between the feed rolls. Her hand was badly burned, and it was found necessary to amputate four of her fingers.

103. Furniture Factory: Man had top of little finger cut off on jointer. While jointing a board his hand slipped into the knives.

104. Chair Factory: Man bored his hand on boring machine by putting his hand under the bit. He was laid up ten days.

105. Casket Factory: Man had his hand nearly cut off while running a wood shaper. He was shaping a piece and his hand slipped into the knives. He was laid up six weeks.

106. Furniture Factory: Man had his hand cut off on a re-saw. Did not learn the particulars. A small boy had his foot badly split by getting his shoe caught with a set-screw on a planing machine. A man had finger cut off on rip-saw, while ripping a board. Man had his hand badly cut on small wood shaper, while operating the same. His hand slipped in the knives. Man had his finger badly cut while operating jointer. His hand slipped in the knives.

107. Organ Factory: Three men had the tops of finger cut off while running a jointer. Hands slipped. Man had thumb cut off while running a band-saw.

108. Sweat Pad Factory: Girl had her skirt caught in shafting under sewing machine tables. Her skirt was torn off but she was not hurt.

109. Plow Factory: Man was killed while putting on a small two-inch belt. The belt run off the pulley and he undertook to put it on. In some way he was caught in the belt and pulled up and wound around the main shaft. He lived but a few minutes.

110. Laundry: A girl was warming her hands one morning on the rolls of the ironing mangle. Her attention was attracted to another part of the room and her hand was drawn in between the feed rolls. Her hand was badly hurt and burned. Another girl put her hand in a washer to see if the water was warm. A bolt struck the back of her hand, tearing the flesh off.

111. Railroad Shops: Man had two fingers cut off on rip-saw. Something attracted his attention, and he put his hand on the saw.

112. Stove Works: Man fell one story through an elevator well. Two men went up on the elevator together, and stopped on the second floor. One of the men got off to get a cart load of stuff to bring down stairs. When he had the load on the cart he pulled it backwards towards the elevator and he stepped into the well hole, thinking the car was still there. While he was gone after the load some one run the elevator down without his knowing it. Did not learn the extent of his injuries. It was lucky that the load did not fall into the well hole and on top of him.

113. Furniture Factory: Man had finger badly cut while running a wood-shaper. His hand slipped into the knives. Another man, while running cross-cut saw, was hit in the stomach from a piece which got on the saw. He was knocked down and the breath knocked out of him. After a half-day he resumed work.

114. Candy Factory: Man had his toes badly bruised going up on the elevator. His foot was sticking out over the platform and it was caught between the floor and the platform.

115. Shoe Factory: Man had his hand smashed operating a dying machine. Man had three fingers cut off by getting his hand in a fleshing machine. He was working around the machine when it was stopped. While his attention was attracted some one started the machine, and he, not knowing it had been started, put his hand in.

116. Printing Office: Man had his foot caught between elevator and floor. His foot was sticking out too far. His foot was badly bruised and one of his toes was broken. Another man was caught in about the same way. His foot was bruised, but no bones were broken. One day the elevator cable got off the drum. A man had his leg broken while fixing it.



The cable had unwound and he was putting it on the drum. While doing so, some one on one of the upper floors started the elevator. He was in such a position that he was caught between the drum and cable.

117. Overall and Shirt Factory: The machinist, while repairing a belt under the tables of sewing machines, had the sleeve of his jacket caught by a protruding set screw on the shafting which drives the sewing machines. His shoulder was thrown out of joint. He was laid up about six weeks.

118. Furniture Factory: Man had part of forefinger cut off on a jointer while jointing a board. It is said his attention had been attracted in another direction.

119. Grain Elevator: While near a shaft one day, opening a wheat bin, a man was caught by the coat on a coupling of the shaft, and whirled around several times. He died from his injuries two days later.

120. Sash, Door and Blind Factory: Man had finger cut off on jointer. His hand slipped in the knives while jointing a piece. The foreman had two fingers badly cut on wood shaper while operating the same.

121. Book Bindery: Man had his hand badly smashed while using a grind stone. He got his hand between the stone and the wood work.

122. Shoe Factory: Girl had skirt entirely torn off by being caught in shafting under sewing machine tables. She was not hurt, but she was badly frightened.

123. Iron Foundry: The elevator cable broke one day while two men were on the car going up, and the elevator fell to the ground. One of the men had his foot so badly hurt that he will undoubtedly be lame for life. The other man escaped without injury.

124. Sash, Door and Blind Factory: Man slightly cut his two fingers on shaper while operating the machine.

125. Laundry: A girl, about twelve years old, had her hand caught between rolls of ironing mangle. She was badly injured. Did not learn the extent or how it happened, but I was told that she was very badly hurt.

#### RICE COUNTY.

126. Rattan Factory: Boy had two fingers cut off by getting them in the knives of a reed cutter. Man had two fingers slightly cut on a rip-saw.

127. Furniture Factory: Boy had finger cut on a boring machine. Two men had fingers cut on rip-saw. Man lost finger on a circular saw.

#### SHERBURNE COUNTY.

128. Saw Mill: A man had two fingers cut off on a shingle saw.

129. Planing Mill: Two men had fingers slightly cut on rip-saw.

130. Sash, Door and Blind Factory: A wheel broke, striking a man in the side, killing him.

#### STEARNS COUNTY.

131. Fiberware Works: A boy, about fourteen years old, had his leg broken and a large piece of flesh torn from the calf of his leg, and otherwise injured. He was oiling the main shaft, which runs along the ground. He was caught by a coupling. A man was turning on the water-wheel when he fell into the gearing. It caught his leg and run him through the full length of his body. One side of his body was badly smashed, and he was otherwise terribly mutilated.

132. Plow and Machinery Shop: Man had one of his fingers badly cut on a rip-saw.

#### ST. LOUIS COUNTY.

133. Grain Elevator: Man, while wiping some shafting, had his jacket caught by a set-screw. He was whirled around the shaft several times. His feet struck the floor with such force that the boards were broken. He died about eight hours afterwards.

134. Sash, Door and Blind Factory: Man had his knuckles badly cut on a jointer. Man had two fingers cut off on a rip-saw. He was not an employe. He went into the factory through curiosity. He went up to the rip-saw and put his hand on it. He did not know it was running.

135. Sash, Door and Blind Factory: Man had finger cut off on jointer. Another man had part of finger cut off on same machine.

136. Saw Mill: Man, in putting a weight on a trimmer-saw, was caught by a set-screw. All his clothes were torn from his body, and his person was horribly mutilated. At last accounts he was living. A boy fell off platform. His foot was badly hurt. A teamster had two ribs broken. His team started to run away, and in some way the wheel hit him in the ribs.

137. Iron Works: Man had his hand injured in a lathe. He lost two weeks' time. Man had his foot jammed and bones of one toe broken. He lost three weeks' time. While carrying a ladle of hot metal it accidentally spilled, and some of the metal fell into a man's shoe. His foot was so badly burned he was laid up eight weeks.

138. Laundry: Girl had hand caught between feed rolls of ironing mangle. Her hand was crushed and badly burned. She lost six months' time. Another girl had hand caught between rolls on collar and cuff ironer. Her arm was pulled in up to the elbow. No bones were broken, but the flesh was burned to the bone. She will never have the proper use of her hand.

139. Saw Mill: Man fell into a hole and broke his leg.

140. Flour Mill: While on a ladder oiling, a man was caught by a set-screw. He was pulled up to the shaft. His arm was dislocated at shoulder, and he was badly cut about the face and head. He will never again have the free use of his arm.

141. Laundry: Girl had her hand caught between feed rolls of ironing mangle. It was burned and hurt so badly that it had to be amputated.

142. Sash, Door and Blind Factory: Man had finger badly hurt in a moulding machine. Man had finger cut on jointer. Man had thumb badly cut on wood shaper.

143. Laundry: Girl had her hand caught between feed rolls of ironing mangle. Do not know extent of injury, as she was still in hospital at the time of inspection.

144. Sash, Door and Blind Factory: Man had part of thumb cut off on rip-saw. Man had two fingers cut off on jointer.

145. Iron Works: Man had collar-bone fractured by a piece of iron falling on him. Man had four fingers on left hand cut off on jointer. Man had two fingers cut off on a lathe.

146. Sash, Door and Blind Factory: Two men had fingers badly cut running rip-saw. Man had part of three fingers cut off on a wood shaper.

147. Saw Mill: Man fell off platform and broke his ankle. Man slipped on a piece of bark and fell on a shaft. His sleeve was caught and his arm was broken.

148. Laundry: Girl had part of finger cut off running a body ironer.

#### WABASHA COUNTY.

149. Sash, Door and Blind Factory: Man had his hand taken off by getting it in a moulding machine.

150. Wagon Works: Man had one finger cut off and two others badly cut on a jointer.

151. Flour Mill: While oiling, a man was caught on the shaft. His arm was broken and badly smashed. It was necessary to amputate his arm. Engineer lost his little finger while cleaning the engine. His finger was caught in the crank.

#### WASHINGTON COUNTY.

152. Mattress Factory: Man had finger cut off on jointer. Another man had hand cut on same machine. Man had hand badly cut on a cut-off saw.

153. Carriage Factory: Man had finger slightly cut on a saw. Another had part of finger cut off on a jointer, and a third had part of finger cut off on a lathe.

154. Flour Mill: Man lost a finger by being caught by a chain. He was feeling into a conveyor when caught.

155. Saw Mill: The foreman was killed by falling into a large wheel.

156. Saw Mill: Man had arm cut to the bone by falling on a cut-off saw. He slipped.

157. Flour Mill: Man had his foot caught in gearing on bolting chest. While oiling, his foot slipped into the gear. He lost all his toes.

158. Sash, Door and Blind Factory: A boy, about fifteen years old, was killed on a freight elevator. He jumped on the elevator with a pail of water while it was in motion. His head must have been caught between platform and floor, or he must have struck his head against something. He lived about fifteen minutes. Man lost two fingers on a jointer, and another man had fingers cut off on a rip-saw.

159. Saw Mill: Man had hand badly cut on a slasher saw.

160. Planing Mill: A boy was cleaning saw dust from under a siding saw. A man, who did not see the boy, started the saw, and the boy struck his hand against it cutting off two fingers.

161. Saw Mill: Man was setting up a machine near the main shaft. He had a rope in his hand, and in some way, the rope was caught on the shaft, and pulled him around it several times. He was so badly injured that he lived but a short time.

#### WINONA COUNTY.

162. Wagon Works: Two men had each four fingers cut off on a surfacing machine.

163. Saw Mill: The foreman had three fingers cut off on a knot saw. A man was caught by a shaft. His arm was broken, and it had to be amputated.

164. Fiberware Works: The night engineer was killed by falling into a large fly-wheel. No one was present at the time, and it is not known how he fell in. When found he was lying in the corner dead.

165. Saw Mill: A board flew back from trimmer saw and hit a man in the eye. It is thought he will not lose the sight. Another man had three fingers badly cut on a trimmer saw.

166. Sash, Door and Blind Factory: Two men had each a finger cut off on jointer. Another man had his little finger cut off on same machine.

167. Flour Mill: Man had his foot caught in a conveyor. It was so badly injured that his leg had to be amputated at the knee.

168. Wagon Works: The man who does the oiling fell from a ladder two different times, once he badly sprained his foot. Man had his finger badly cut on rip-saw. Another had top of finger cut off on a jointer.

169. Sash, Door and Blind Factory: A man was hit two different times with a piece of board flying back from rip-saw. Once he was struck in the stomach and once in the eye. He was not badly injured either time. A man had two fingers badly cut on a rip-saw. A man had a finger cut off on a jointer.

170. Sash, Door and Blind Factory: Man had finger badly cut on a cut-off saw.

171. Laundry: Girl had her toe caught between floor and elevator platform. Her toes were slightly bruised.

172. Carriage Works: Man had two fingers cut off on a jointer. Another had top of thumb and top of finger cut off on same machine.



## CHAPTER IV.

## THE FINANCIAL LOSS TO WORKMEN BY ACCIDENTS.

Many persons are killed and maimed each year by accidents. The resulting financial loss is enormous. It has not, however, attracted the attention which it deserves. Possibly the explanation of this fact is to be found in the influence of the standards and traditions which have been inherited by this generation from a remoter past. In the elder days the courts refused to place a value upon human life since it was believed that such life was beyond price. It is true that human life is more valuable than gold, and it should never be weighed in the balance against wealth when the expenditure of money can save that life. And yet accidents do happen. Men are killed. Their relatives lose their support as a result. Men are maimed and they suffer the loss of a portion of their current income and have their earning power lessened or destroyed. In an age such as this, which measures everything by the standards of the market, these accidents must be considered in their financial aspects. The legislature of Minnesota has so considered them, and has established as the maximum value of a human life destroyed by accident the sum of five thousand dollars. To juries is left the task of determining for each individual case the loss to those injured by accidents which maim but do not kill. The present investigations of the Bureau of Labor Statistics have assumed the basis of damage established by law as a standard by which to estimate the financial loss to a state or a nation as the result of accidental injuries to its citizens. Assuming, then, the value of a life destroyed to be \$5,000, and allowing corresponding sums for those maimed but not killed, it is found that the loss to the people of the United States in a single year by accidents amounts to a sum total of not far from \$150,000,000. This is larger than the enormous annual fire loss of the nation and is four times the annual interest on the national debt.

The burden entailed upon the people of the land as a result of the annual fire loss is one which by its magnitude has for years attracted the attention of financiers, statesmen, and philanthropists. Our cities and larger towns, at public expense, provide costly appliances and support a body of experienced men to fight fires. Laws are also enacted to lessen, as far as practicable, the public liability to fires. But, if this is justifiable with fire losses, shall not the measures be approved which have been suggested in the preceding pages for reducing the hazard to life and limb in the factories of our State? Surely the greater financial loss by accidents would warrant, for the purpose named, a far greater expenditure than would be required by the legislation recommended.

The financial loss by accidents has hitherto fallen almost exclusively upon the wage earners and not, as does the similar loss by fire, upon the property owners. The man with a million dollars invested in a factory may not in his life time have had a cent's worth of property destroyed by fire. None the less his annual fire insurance premiums constantly remind him of the risk of conflagration to which his establishment is subject. This makes him alive to methods of preventing such loss in the community. But in factories with a million dollars of invested capital there are many persons injured, and possibly some killed, by accident each year. The resulting financial loss to the wage earners by these accidents amounts to a sum, as great as, if not greater, than the premiums for fire insurance upon the establishment in which these persons work. The employer does not appreciate this fact since, under present arrangements, he expends far less by reason of the injuries to his workmen than he does in the way of fire insurance premiums. The general public does not appreciate it, since the average accident involves only a small loss and does not appeal to the imagination as does a vast conflagration with its destruction of thousands of dollars of property.

#### OUGHT EMPLOYERS OR EMPLOYEES TO BEAR THE FINANCIAL LOSS BY ACCIDENTS?

To the foregoing question the average employer answers—the employee; the workingman on the other hand says—the employer. In support of his position the employer makes the following assertions: Only when the employee thus bears the responsibility for accidents will it be possible, in factories or in mines, or on railroads, to secure carefulness and fidelity of service. Without such service there can be no successful business to divide profits between master and servant. The employer urges further: “I pay my workmen good wages. I pay them promptly and regularly. I am kind to them in all things and that is enough. They are paid sufficient wages to cover the risk of occupation and it is unjust to ask or compel me to pay for that risk a second time.” The foregoing statement fairly represents the position of the employing classes with reference to their responsibility for damages to their employees by accidents. It presents one class of facts affecting the relation of employer and employee. It leaves out, however, another group of facts that are ever before the mind of the worker in hazardous occupations.

#### THE EMPLOYEE'S POSITION.

In those occupations the employee sees one of his fellows killed or maimed for life. He knows that this fellow and his family must for years be supported by the goodwill of their friends, or by the charity of the public, or of the poor officers of the town. He knows that he is daily and hourly exposed to the danger of the same sad fate. A discontent springs up in

his heart. He is filled with restless feelings of dissatisfaction which become a deep underlying cause of many strikes and other labor disturbances. If asked to state his case he presents a line of facts quite different from those set forth by the employer. He says: "The financial hazard for accident is fixed, and like that of fire risk is easily ascertainable. It is like fire hazard, one that can be and is expressed in dollars and cents and for that reason should be borne by capital. The public profit from our labors, and by the risks which attend the same. Without our peril in the mine the world would not be supplied with fuel, or with any of the wealth of mineral possessions. Without our risk of life and limb on the railroads it would not have the benefit of cheap and desirable transportation. As we toil for the gain or pleasure of the world, it is wrong that we alone should bear the financial burden of those accidents which are an incident of modern industry. There is but one way in which that burden can be equitably made to rest upon all who enjoy the blessings purchased by the toil of those exposed to these perils. That is by first making it rest upon the employers. They can then make the hazard of their business a part of their expense, and it becomes embodied in the price charged for the product of the factory or the services rendered by the railway."

The workman urges further: "Most of the accidents from which we suffer are preventable, if only proper safeguards are provided and their use enforced in connection with wise rules of superintendence. We can not buy these safeguards. We can not enforce their use. We can not make rules. We can only obey those made by others. Let those in equity bear the burden of possible loss by accidents who alone possess the power and means to secure safeguards, to employ wise and skillful superintendents, and make correct rules to direct our labor. We ask for guards, for wise direction and good rules, and, failing in these, to be fully reimbursed for our resulting losses by accident."

#### THE FUNCTION OF BUREAUS OF LABOR STATISTICS.

The Bureaus of Labor Statistics were created originally to investigate all controverted questions between labor and capital, employer and employe. None could better deserve the attention of those Bureaus than this which concerns the liability of employers for the accidents suffered by their workmen while in their service. Massachusetts was the first state to establish these Bureaus. The legislature of that state, by special joint resolution, in 1882, directed its Bureau of Labor to investigate this subject. The result of the investigation made in pursuance of that resolution is embodied in the report of the Massachusetts Bureau of 1883. Later, the New Jersey Bureau made a study of the same subject, and we find the results of the same in its report of 1888. The Pennsylvania Bureau has also made an exhaustive review of the same subject in its



report for 1891. All three of these reports, those of Massachusetts, New Jersey, and Pennsylvania, take up the question in its legal and historical aspects. They present the laws, decisions of the courts and general customs, past and present, in the several states of our Union and in the various countries of Europe.

#### THE WORK OF THE MINNESOTA BUREAU.

This Bureau, during the past two years, has investigated only a few phases of this great and growing question of employer's liability. Its work in this field is only a part of its investigation of the factories and workshops of Minnesota. In other chapters devices have been illustrated and described showing how machines could be so guarded as to lessen accidents. Unguarded machines were in those chapters shown to be dangerous. Guarded machines lessen the hazard to the life and limb of the workers. How is that risk affected by the varying responsibility of the employers therefor?

#### EMPLOYERS' LIABILITY LAWS AND THE HAZARD OF FACTORIES.

The only statistics published which throw any light upon this subject are those that present an exhibit of accidents in the factories of England in the years of 1877, 1883, and 1887. They are as follows:

NATURE OF INJURY.	NUMBER OF ACCIDENTS.		
	During the six months ending Oct. 31, '77.	During the six months ending Oct. 31, '83.	During the twelve months ending Oct. 31, '87.
Causing death.....	168	444	368
Amputation of right hand or arm.....	29	62	58
Amputation of left hand or arm.....	24	63	41
Amputation of part of right hand.....	230	483	411
Amputation of part of left hand.....	205	459	355
Amputation of part of leg or foot.....	27	57	32
Fracturing limbs or bones of trunk.....	181	459	355
Injury to head or face.....	233	888	704
Lacerations, etc., not given above.....	1,885	5,274	4,257
Total.....	2,121	8,501	6,827

The great apparent increase in the number of accidents from 1877 to 1883 is doubtless due to a more perfect report of accidents for the later year. In the earlier days the factory owners of England, as the same class of people in Minnesota at the present time, were unwilling or afraid to make full reports of injuries to workmen in their establishments. This unwillingness vanished in Great Britain when the public in that land fully appreciated the reason for reporting accidents. Hence the fuller reports shown in the foregoing tables for 1883 than for 1877. But this change in the attitude of employers cannot explain the reduction of sixty per cent. in the accidents reported in 1887 as compared with those of 1883. The explana-

tion for that reduction is to be found alone in the beneficent results following the practical operation of the employer's liability acts of 1880. The factory legislation enacted before 1880, to secure the guarding of machinery, was not thoroughly enforced until after the passage of the employer's liability acts of that year. Before the passage of those acts the employers never realized their responsibility for accidents. As a result they did not heartily co-operate with the movement for guarding machinery. Soon after the passage of the liability act of 1880, a change in this respect began. Stimulated by that act the employers of England adopted all practicable devices for guarding machinery. They enforced wise rules of superintendence. We note the effect of this change in the wonderful decrease in the factory accidents which is shown by the foregoing table to have taken place between 1883 and 1887. Here, then, is one illustration covering the experience of a great manufacturing nation, showing that the hazard of the workmen from accidents does decrease with the increasing financial responsibility of the employers for such accidents.

This general proposition is illustrated by the experience of factories in the United States. To be sure there are no statistics of accidents here. The appeal must be made to another line of evidence. The daily papers and the factory owners alike bear uniform witness that more injured workmen than formerly sue their employers to recover damages for injuries suffered by them while in their employ. This increased litigation over injuries to workmen is to be noted in all states, in those where there has been no change in legislation on the subject, as well as where special employer's liability acts have been passed. As the result of this increased litigation the subject of avoiding accidents has received a large measure of attention. The ten years which has witnessed this increased litigation has produced more inventions for guarding machinery than were devised in the hundred years of factory life which preceded. The records of the patent office thus bear witness to the increased safety to workmen which follows the increasing liability of employers for accidents to their employes.

#### THE LESSON OF STEAM-BOILER AND ELEVATOR INSURANCE.

All legislation relating to accidents should have as its main object the lessening of casualties. The adjustment of money responsibility for the resulting financial loss must ever be made subordinate to this end. The employer, as has already been stated, urges in opposition to the legislation desired by his employes, that only when the employe bears the larger share of responsibility for accidents will it be possible to avoid casualties and secure faithful service. Hence he argues that increased employer's liability for accidents tends to make those accidents more common. It is, therefore, a curse to the workman and an injury to the community. In support of his assertion he cites the many instances of carelessness of work-

men which have come under his observation. It is true that the cases of carelessness thus cited do seem to support the theory of the necessity of making the toiler bear the responsibility for the accidents which fall to his lot. But, when considered in connection with all the experience of the modern world, these cases are found to be exceptional. In opposition to them must be placed the facts just referred to. The statistics of British factory accidents and the invention and use of safety devices in the United States alike show, on a large scale, how increased responsibility on the part of employers materially aids in lessening the hazard of factory life. The most marked illustration of this fact to be found in the modern world is that furnished by the results obtained by the introduction of the present system for the inspection and insurance of steam boilers and passenger and freight elevators.

The first of these systems to be introduced was that for the periodical inspection of steam boilers. Before its introduction the responsibility for accidents practically rested wholly with the engineer in charge. If a boiler exploded the engineer, as a rule, was killed. Here, if anywhere, should we find the best results following the responsibility of the employe. With the certainty of death before him, in case of accident, there should have been, according to the employer's theory, a complete immunity from such casualties. The facts contradict that theory. In spite of the known peril of the engineer, hundreds of explosions occur each year, as many lives were lost, and thousands of dollars worth of property were destroyed. The responsibility of the employe did not secure that employe or his master from any of the hazard of boiler explosion. After a time the scientific and business world began to appreciate this fact. They saw that there were involved in these explosions other and greater elements of hazard than those which the average engineer knew how to avoid. They saw the need of periodical and scientific tests of the boiler by experts. They beheld the value of scientific rules for avoiding explosions and the need of enforcing such rules. Perceiving these things, men devised the modern system of boiler indemnity insurance. The practical working of that system has demonstrated this fact. Increase of responsibility on the part of the employer for accidents lessens casualties. To such an extent has this been established by practical experience that no wise or prudent business manager is justified in the case of steam boilers of allowing the responsibility for explosions to rest with the engineer. If he would lessen his hazard from such explosions, he must take upon himself all responsibility. At least he must take it all away from the engineer. Having taken upon himself all possible responsibility for boiler explosion, the wise employer of to-day calls to his aid the use of scientific tests and rules of managing boilers furnished by these indemnity companies. Doing so he practically prevents accidents, and at the same time protects himself and his employes completely from any financial loss by possible boiler explosion.



In the foregoing case is fairly presented the relative importance of the employe's and employer's responsibility for accidents. A responsibility should rest upon the laborer for the results of his acts and neglects. Such a responsibility does tend to beget careful work and does aid in lessening accidents, as the employer argues. The careful engineer can do much to avoid boiler explosions. But this carefulness of the engineer is but a small factor in preventing accidents when compared with the scientific tests and the business precautions brought into activity by the best of the boiler indemnity insurance companies. Capital, and not labor, is the party at interest which can secure these aids. Hence capital should assume the hazard of accidents, and by so doing save money as has been proven possible with boiler inspection.

The inspection of passenger and freight elevators illustrates the same principle of the responsibility of capital for accidents. Without legislation upon the subject employers find that they can not afford to allow their elevator employes longer to be responsible for possible accidents. They assume this responsibility for themselves by the payment of the premium for insurance. The resulting experience of the world justifies the wisdom of the step. With elevators as with steam boilers the increased responsibility of the employer is attended with a lessening of accidents. By assuming the fullest responsibility in these cases the employer gains much greater financial immunity than he would possess were all his present legal liability for damages to his injured workmen abolished. The employed are correspondingly benefited. This must ever be the result of introducing juster methods of dealing with any of the perplexing questions between labor and capital.

#### INCIDENTS OF BUREAU WORK.

In its inspection of factories the Bureau of Labor Statistics has, by its officers, noted many facts bearing upon this general subject. Some of those facts are negative in their character. They simply show how little men, as a whole, will do to prevent accidents unless they find some financial motive for so doing. Reference was made on page 41 to a manufacturer who had secured indemnity insurance protecting him against loss in case any of his workmen suffered damage by accident. Requested to guard his dangerous machinery this man declared, with oaths, that he would not, since he would save nothing thereby. Several cases of the same kind, though none of them so aggravated, have come to the attention of the Bureau. To be sure, many persons with similar indemnity insurance have been the most ready of our manufacturers to adopt safety devices. But the great majority of these latter have had more or less previous expense or litigation over injuries to their workmen. In one way or other they had seen the financial value of using all practicable means of avoiding casualties. The case of a man refusing to guard machinery, because he was

protected by indemnity insurance, is not an isolated one. Many times, when the inspector of the Bureau has called the attention of factory owners to the need of guards for his establishment, he has received this reply: "We are secured by indemnity insurance." When to this the inspector has said: "All true, but that can be no reason for not guarding dangerous machinery and places." The owner says: "Oh, yes, that is so." He will not argue the question with the inspector, but the average man who thus refers to his indemnity insurance never guards his factory. In fact so many factory owners have made these replies and never shown any interest in lessening accidents in their establishments that it is impossible not to associate their non-liability from loss and their neglect to provide guards for avoiding accidents.

Another line of facts coming under the constant observation of the Bureau should be referred to in this connection, although spoken of at length in Chapter I and the introduction. The average workman shows great unwillingness to adopt even the best of safety devices, when these devices are new or previously unused by him. He does not possess the knowledge or the ability to fully comprehend his liability to casualty, or understand the value of the means suggested to avoid the same. Then, again, the present industrial system forces the average workman to be careless or indifferent to personal hazard. The secretary of the International Furniture Worker's Union of the United States, in speaking of this carelessness and its resulting loss of life and limb, says: "Look at the fingers of the machine hands of our trade, or of the cabinet-makers who are obliged to work on machines. How few there are to be found that are not maimed. Yet we often hear it said that it is their own fault,—that they are too careless. But whenever we look beneath the surface what do we find? In almost every case, where the workman neglect to make use of appliances of safety, the real cause may be found in the constant hurrying, the everlasting admonitions to save time. In this way a man is made to feel that the foreman does not like to see him spend any time to save his limbs. Such a man may be blamed, of course, but we must bear in mind that, as an isolated individual, he can do nothing against the evil. \* \* \* That evil arises from the competitive system of modern factory life." Now, whether the foregoing explanation of this leader of factory workmen, engaged in dangerous occupations, is correct or not, this fact is evident. Everywhere we find, with variations and extensions, the conditions relating to personal hazard which prevailed with steam boilers and elevators before the introduction of boiler and elevator insurance. Individual carefulness is a factor in avoiding accidents, but it is not comparable in value with that of the means, methods and rules for avoiding them which are developed by a scientific study of the subject. If accidents are to be eliminated from factory and railroad life, it can only be as the



result of such a study and the introduction of methods allied to those now in vogue with reference to boiler and elevator insurance. Scientists and students must devise ways of lessening or avoiding accidents. Business men must organize companies to prevent factory accidents, as now they seek to avoid boiler explosions. The employer will then pay for indemnity as at present, but the premium paid will be expended, not as now, in fighting the claims of the wage earners, but in practical measures for doing away with casualties. In other words, the average employer, instead of striving to shirk or evade, in one way or other, his financial responsibility for accidents, as he does now, must fully assume the same. He must not seek any immunity by reason of the carelessness of his workingman. Instead he must lessen or destroy the possible power of that carelessness for mischief. He must call to his aid in this undertaking all possible knowledge, skill and intelligence relating to the subject. Only by this method has the race in the past made any practical progress in lessening accidents. Many illustrations of this fact have already been presented. The increased legal liability of employers in England, following the enactment of the British liability law in 1880, thus decreased the hazard of factory life. The increase in the number of accident damage suits in America aided in introducing safety devices. The complete assumption of financial responsibility for the care of his boilers and elevators by the employer has been attended with like beneficent consequences. So all along the line. The facts presented, the outcome of legislation affecting great nations, and the experience of thousands who have profited by boiler and elevator insurance, alike bear witness that increased responsibility on the part of employers for accidents has been and is a great and desirable factor in lessening the physical hazard which surrounds the wage earner of the present.

#### SOME PRACTICAL PROBLEMS.

But by what methods or along what lines can best be secured this extension of the employer's responsibility for damages to his workmen by accident? Here is a question which involves in its correct answer the equitable adjustment of the \$150,000,000 of our nation's annual loss by casualty. Many principles are involved in the correct and hence final settlement of this great factor in the relation of employer and employed. Legislation should consider, not only how to lessen accidents, but how to give the largest practical financial relief to the injured workmen and with the least possible resulting burden upon capital.

The modern world has been legislating upon this subject for about forty years, although most of the laws enacted have been passed since 1870. This legislation was in most states preceded by a series of decisions by the courts concerning the legal liability of the employers for damages by accidental injuries to their employes. Those decisions had departed from the ordi-



nary rules of equity applied in cases of injury to person and property. They were based upon the following ideas, assumed as economic and legal principles: "The employe, in a dangerous occupation, takes upon himself all the ordinary risk incident to the business. In his terms of service there is an implied contract by which in his wages he is paid for that risk." A further idea associated with these two so-called principles of law was this: The workman's diligence and caution is stimulated by the fact of his responsibility for personal injuries. The first enunciation of these foregoing principles as accepted doctrines of the common law was made not far from 1830. Their application to the settlement of damage suits brought by injured workmen against their employers did not aid in lessening causalities. They did not secure more faithful service for the master, neither did they aid in protecting him from losses by accident. They merely left the injured workman without financial relief. They crippled him as a member of the community, and this without giving to the employer any corresponding benefit. Much hardship and needless suffering was thus imposed upon the wage earners. Perceiving this fact the state of Georgia, in 1856, modified the foregoing rule of the common law concerning the non-liability of employers. This law, however, only affected railroad employes. It enacted that "the several railroad companies \* \* \* shall be liable to pay damages to any officer, agent or employe of such company who may be injured while in the service of such company by the carelessness, negligence or improper conduct of any of said companies, or of the officers, agents or employes of said companies, by the running of the cars or engines of any of the said companies." This statute also provides that "if the person injured is himself an employe of the (railroad) company, and the damage was caused by another employe, and without fault or negligence on the part of the person injured, his employment by the company shall be no bar to the recovery."

Iowa, in 1862, began legislating along the same line. Its legislature in that year enacted that "every corporation operating a railway shall be liable for all damages sustained by any person, including employes of such corporations, in consequence of the neglect of agents, or by any mismanagement of the engineers or other employes of the corporation, and in consequence of the willful wrongs, whether of commission or omission, of such agents, engineers, or other employes, when such wrongs are in any manner connected with the use and operation of any railway, on or about which they shall be employed, and no contract which restricts such liability shall be legal or binding."

Many other states of the American Union have in like manner modified the principles of common law for the regulation of employer's liability. Most of this legislation has been subsequent to 1870. Minnesota, in 1887, passed a law entitled "An act to define the liabilities of railroad companies in relation

to damages sustained by their employes." This law constitutes Chapter 13 of the General Laws of 1887. It is as follows:

"Section 1. Every railroad corporation owning or operating a railroad in this State shall be liable for all damages sustained by any agent or servant thereof by reason of the negligence of any other agent or servant thereof, without contributory negligence on his part, when sustained within this State, and no contract, rule, or regulation between such corporation and any agent or servant shall impair or diminish such liability.

*Provided*, that nothing in this act shall be so construed as to render any railroad company liable for damages sustained by an employe, agent or servant while engaged in the construction of a new road, or any part thereof, not open to public travel and use."

Of European countries Germany seems to have led all the others in legislation relating to this subject. Many of the minor states, which later became merged in the German Empire, had, before 1870, enacted various employer's liability laws. All this local legislation was, after the creation of the empire, superseded by the Imperial Liability Act of June 7, 1871. No particular attention has ever been given in America to this early German legislation. Labor in the United States is organized on the same basis with that made use of in Great Britain. This fact has brought British labor legislation to the attention of American working people far more than that of Germany or of any other country. England is from this fact supposed by most people to have led and to be still leading in all measures for the practical relief of the toiling masses. This is in some degree a mistake. Germany passed its general liability law in 1871. England enacted its first similar law in 1880. German experience with these laws is longer in years and should be given greater consideration than that of Great Britain. The results of German experiments with the liability laws and allied legislation will now be considered at length in connection with the same problem in other lands.

#### THE EFFECTS OF EMPLOYER'S LIABILITY LAWS.

One result of all this legislation is good and has already been referred to. It has hastened the movement for the introduction of safety devices and secured better rules of superintendence of workmen. It has thus indirectly lessened accidents. The other effects of this legislation have been disappointing. The wage earners have no where secured the practical relief which they fondly hoped would follow the passage of these laws. Many causes have conspired to bring about the hitherto practical failure of this class of legislation. In England, Germany, and America, after the passage of these laws, factory owners and others, in engaging their help, required them to sign contracts relieving the employer from all damage by reason of accidental injury while in their service. The law is thus nulli-



fied and all its possible benefits destroyed at one stroke of the pen. These contracts are in use in all sections where they have not been expressly forbidden by statutory law.

Another fact about these laws that make them so disappointing to the toilers is that they are not self-operating. They do not directly secure any thing to an injured person. If the employer objects, the injured employe can secure nothing excepting by the slow and costly process of a suit at law. Now, a law-suit is a sort of luxury which only the very rich man can afford. No poor person should begin such a suit if it can possibly be avoided. Taking advantage of this fact many employers never pay an injured workman unless compelled to by decree of the court. Further, employer's liability insurance companies are organized with great capital. The practical effect of these companies is to make it more difficult for injured workmen to recover anything beyond the wish or will of the employer. As a consequence no workingman ever brings a suit for an injury involving only a small loss. No matter what may be the merits of the case, he can better afford to do nothing about a minor hurt than spend twenty-five dollars to recover ten. This same question of cost of litigation induces the average honest workman who is seriously injured to compromise his claims. He accepts almost any beggarly pittance rather than risk the chances of a suit at law.

These laws give no relief for cases involving any measure of contributory negligence. Such cases make up about one-half of all casualties. Hence the theoretical benefit of these liability laws may be said to cover about one-half the casualties of workingmen. But in practice that amount of benefit never is realized. Rather than have a law-suit the workman surrenders his claims by reason of all minor injuries. He also, for the same reason, in a great share of the serious hurts, compromises his claims for a pittance. Thus he loses or at least fails to receive anything for one-half or two-thirds the benefits which he feels he is honestly entitled to by the terms of the statutes. But this does not state all the disappointment by reason of this litigation. Of the cases which go into court and in which a verdict is secured for the plaintiff, one-half of the judgment is consumed in lawyers' fees and court expenses. On the whole, the body of injured wage earners receive for their hurts the equivalent of from one-sixth to one-third the relief which theoretically should fall to their share by the terms of these liability laws. Or when allowance is made for accidents, in which contributory negligence has a part, the injured workers, under the present arrangement, bear from five-sixths to nine-tenths of the loss by their accidents. The cost to the employers, however, is not correspondingly reduced since they have to sustain the army of lawyers who fatten upon this class of litigation. They expend for court expenses and lawyer's fees sums which would go far towards giving the workers all or even more than is usually asked in their behalf.



But while these laws have thus proved so disappointing to the wage earners, they have become, at the same time, very obnoxious to the employers. They have developed a class of lawyers who make a specialty of damage suits. Some of these lawyers have secured a reputation of not being over-scrupulous in their methods. The employers charge that false testimony is often manufactured for these damage suits. Possibly the injured and their friends, seeing how little justice there is in the present arrangement, as outlined above, are grievously tempted and are not over-scrupulous in stating before the court the facts involved. There are, without question, wrongs and evils on both sides. Each side sees those under which it loses and is hardly in the mood to consider the complimentary facts. The whole situation is fraught with evil and wrong. The employer is always confronted with the professional damage lawyer. He is vexed and annoyed with the increasing demand of his workmen for relief when hurt. He avails himself of all tricks and devices possible in the business and legal world to escape from as much of his legal responsibility to the injured as he can. The employe on his side suffers—obtains no adequate relief or satisfaction. He becomes more discontented. Bad feelings of mutual hatred and distrust arise between employer and employe. These parties are placed in a position of chronic antagonism. And so it will continue until a measure of relief to injured workpeople is provided that is just to all concerned.

The experience with these laws, as detailed above, demonstrates the great need of some better practical method of giving relief to those suffering from accidental injuries. What the injured workworker or his family are to receive should be paid promptly and with no accompanying expense, and with as little red tape and uncertainty as possible. They should receive it, not as an alms, but as something which they can demand under the same surroundings and conditions attending the payment of their daily wages.

#### GERMAN ACCIDENT INSURANCE.

As a nation the Germans were the first to realize the practical weakness and inefficiency of employer's liability laws. They also comprehended the real needs of the wage earners as stated above. They had enacted an imperial employers liability law in 1871. Similar laws had previously been in force in Prussia and some other states before that time. They had been experimenting with such laws for twenty years before the passage of the first one of the kind in Great Britain and before there was much legislation of the same nature in America. During those same years there sprang up, in various portions of the realm, societies of employers and employes, brought together for the purpose of giving to the workers the benefits of accident insurance. The practical good following the workings

of these associations was so much greater than that which resulted from the liability laws that the Germans were led to establish their present system of compulsory accident insurance. The law for the establishment of that system was passed July 4, 1884, and went into effect for the whole empire Oct. 1, 1885. The provisions of the law for the protection of the wage earners are carried out by means of *Berufsgenossenschaften*, or trade associations of employers. The formation of such associations was at first compulsory in only a few industries, but is now obligatory in most of such industries. This is shown by the number of workmen insured at the close of the year 1890. This was 13,619,750. The organization of these trade associations "is effected at a general meeting of the employers interested, which takes place under the supervision of the Imperial Insurance Bureau. After this, by-laws are adopted for their administration and the discharge of their legal duties, which include the collection of the necessary funds for current expenses, raised yearly from the employers alone, by contributions apportioned on the basis of wages and salaries earned in the respective establishments by the persons insured, and on the basis of 'danger tariffs.'"

These accident associations, out of the funds collected by them, pay certain fixed indemnities to the workmen injured, and in case of death to his representatives. They act in connection with another class of associations existing to give the workmen protection and benefits in case of sickness and disability arising therefrom. When a workman is injured or is sick he receives from these sick associations, for thirteen weeks, free medical service, medicines, etc., and sick benefits equal to one-half of his wages. For the support of this system of sick insurance the workmen interested pay two-thirds the necessary contributions, and the employer the balance. If, then, a workman is injured and is disabled from work for less than thirteen weeks, he receives no benefit from the accident insurance. He is supported and cared for by the sick association to whose funds he has contributed two-thirds. If the disability is more serious the burden falls, after thirteen weeks and in case of death, at once wholly upon the employer. If the workman injured has brought his accident about intentionally he forfeits all claim to indemnity from either the sick or accident associations. In the same spirit it is enacted that if the employer or his agents could have prevented the accident the insurance does not protect him. The association pays the workman and then proceeds to collect it back from the negligent employer.

The injured workman, after being supported for thirteen weeks by the sick insurance, as above described, is then entitled to the expenses of cure thereafter arising and to a regular payment during the continuance of his inability to work. These expenses and benefits are paid from the accident insurance fund managed by the accident insurance associations.



The accident benefits thus received are usually, in case of total disability, two-thirds the amount of the average earnings of the injured person. In case of death, an additional indemnity is provided of twenty days wages for burial expenses. Pensions are also granted to those dependent upon the individual killed. The widow receives, until her death or remarriage, 20 per cent. of her late husband's earnings. If she remarries she would at the time receive three times her annual pension, and the pension would come to an end. Each of the children, up to its fifteenth year, is given 15 per cent. of the fathers wages. If its mother is also dead it receives 20 per cent. The total paid to widow and children shall not, however, exceed 60 per cent. Provisions are also made for the support of parents and grandparents dependent upon the deceased. If continued disability follows the accident and yet that disability is not total, the injured does not receive the two-thirds wage benefit, but a proportionately smaller payment.

The German accident insurance satisfactorily meets many of the requisites of the relief which should be given to injured workmen. It affords relief at once and of the character specially needed at the time. The injured are not bothered about doctors' fees or medicines. All that is provided for. The relief benefits promised in case of disability are as sure to be paid as are their weekly wages. The workmen are protected from accident at all times. In Germany 53 per cent. of all fatal accidents to workpeople occur in other places and at other times than at their daily tasks. This fact alone makes the insurance worth twice what benefit can come from liability laws. Then the insurance protects the workman from the results of his own carelessness and ignorance. This is a further advantage. When allowance is made for all these factors and for the practical failures of liability laws already described the fact is made clear of the superiority of insurance over liability legislation. Liability laws fix a certain indemnity in case of death and corresponding sums are supposed to be paid for injuries not fatal. If insurance is adjusted on a basis such that the death benefit secured is the same described in the liability laws, the insurance system would afford from six to eight times the practical good of the usual results of the liability laws. To secure this estimate allowance must be made for the accidents to workmen while not in their employer's service, the expense of litigation and all other kindred losses and deductions described under the operation of liability laws.



GERMAN ACCIDENT INSURANCE OF WORKINGMEN.  
OFFICIAL REPORTS OF THE IMPERIAL INSURANCE DEPARTMENT.

TABLE A. ESTABLISHMENTS, INSURED AND INJURED IN THE YEAR 1890.

INSURANCE ASSOCIATIONS. ( <i>Berufsgenossenschaft.</i> )		NUMBER OF INJURED AMONG THE INSURED.						
		Number of Establishments under insurance laws.	Average number of insured persons.	By accidents entitling the injured to indemnity from accident associations.				By accidents with disability of less than 13 weeks.
				Disability continuing from preceding years.	By accidents in 1890.			
		Total number of accidents.			Number producing total disability.	Number resulting in death.	Number of pensioned persons killed.	
No.	NAME.	In the year 1890.						
1	Miners.....	1,892	398,380	7,016	3,403	480	824	1,851
2	Lithographers.....	14,983	251,400	2,313	1,188	58	204	435
3	Skilled mechanics.....	2,124	61,182	297	179	14	7	5
4	Iron and Steel workers, of S. Germany.....	6,943	103,972	1,232	707	10	46	80
5	Iron and Steel workers, of S. W. Germany.....	347	31,979	339	187	1	20	39
6	Foundry and Rolling Mills, of Westphalia.....	250	87,537	1,627	794	52	75	143
7	Machinists, etc., of Westphalia, etc.....	5,209	86,361	1,161	607	16	36	77
8	Iron and Steel, of Saxony and Thuringia.....	3,151	71,551	782	570	35	23	52
9	Iron and Steel, of N. Germany.....	2,398	56,363	647	392	27	37	97
10	Iron and Steel, of Silesia.....	1,218	69,113	749	525	24	57	96
11	Iron and Steel, of N. W. Germany.....	3,399	75,947	981	553	5	47	83
12	Precious and base metals, of S. Germany.....	1,989	42,389	332	293	11	14	24
13	Precious and base metals, of N. Germany.....	2,143	65,531	99	50	3	1	1
14	Musical Instrument Makers.....	780	22,680	244	135	7	14	154
15	Glass.....	723	54,113	186	102	18	8	27
16	Pottery.....	890	58,263	186	102	18	8	16
17	Tilemakers.....	12,330	272,669	1,011	668	77	99	205
18	Chemical Industry.....	5,043	98,391	1,289	627	86	92	235
19	Gas and Waterworks.....	1,120	24,876	241	114	20	15	47
20	Linen.....	409	40,995	350	110	1	10	19
21	N. German Textile.....	2,116	116,980	676	253	10	25	43
22	S. German Textile.....	900	76,483	455	198	5	16	24
23	Silesia Textile.....	455	42,379	296	96	3	6	13
24	Alsace-Lorraine Textile.....	426	60,823	319	190	3	3	8
25	Rhine-Westphalia Textile.....	1,939	108,575	567	264	10	15	21

26	Saxony Textile.....	3,422	153,868	740	327	7	19	30	1,120
27	Silk.....	607	46,327	35	411	1	1	4	219
28	Papermakers.....	1,233	57,035	961	411	18	44	92	1,489
29	Paperworkers.....	1,968	58,494	294	143	86	8	28	636
30	Leather Industry.....	2,417	47,339	348	171	5	16	25	626
31	Saxony Wood.....	2,650	20,676	251	118	5	7	12	492
32	N. German Wood.....	20,897	135,473	2,002	1,211	10	78	195	3,274
33	Bavarian Wood.....	3,755	21,187	424	241	9	15	23	575
34	S. W. German Wood.....	6,484	36,577	440	192	23	13	15	577
35	Milling Industry.....	38,023	86,343	1,592	721	30	99	116	1,614
36	Provision Industry.....	11,016	53,425	401	269	6	14	29	768
37	Sugar.....	7,923	43,388	948	432	16	43	102	2,014
38	Charcoal Burners.....	5,556	70,017	482	217	8	35	87	715
39	Brewers and maltsters.....	4,663	105,486	88	838	94	89	193	3,855
40	Tobacco.....	2,908	107,171	246	46	2	5	2	192
41	Clothing Industry.....	3,186	5,752	34	155	11	6	6	554
42	Chimney Sweepers.....	8,682	53,287	522	11	.....	.....	.....	68
43	Hamburg Housebuilders.....	15,955	149,533	1,581	1,092	86	3	66	1,335
44	Silesia-Posen Housebuilders.....	6,702	71,387	753	458	122	109	226	2,476
45	N. E. German Housebuilders.....	13,378	47,725	570	338	29	79	129	1,202
46	Hanover Housebuilders.....	5,675	500	500	192	20	46	79	1,212
47	Magdeburg Housebuilders.....	9,682	108,095	893	518	6	25	50	884
48	Saxony Housebuilders.....	4,463	30,802	213	138	30	67	91	2,278
49	Turingia Housebuilders.....	10,467	60,378	496	321	16	22	58	417
50	Hesse-Nassau Housebuilders.....	16,260	107,317	1,081	618	20	47	88	1,261
51	Rhine-Westphalia Housebuilders.....	11,997	32,047	251	221	24	106	207	1,894
52	Württemberg Housebuilders.....	13,332	89,603	1,241	732	4	27	31	467
53	Bavarian Housebuilders.....	7,992	42,913	273	100	17	100	162	2,350
54	Southwestern German Housebuilders.....	4,218	60,404	195	115	13	38	59	847
55	Printers.....	113	25,262	321	139	4	7	17	592
56	Private Roads.....	206	28,220	139	59	9	37	80	907
57	Public Roads.....	18,351	75,436	1,189	734	10	5	16	811
58	Expressmen, etc.....	25,923	64,607	1,175	671	12	111	243	2,614
59	Transportation in Wagons.....	3,351	12,792	115	97	4	55	245	1,555
60	W. German Inland Navigation.....	4,819	20,132	188	152	5	54	12	405
61	Navigation River Elbe.....	8,104	25,251	147	109	3	47	71	489
62	E. German Inland Navigation.....	1,749	42,546	215	270	5	91	90	527
63	Deep Sea Navigation.....	8,736	155,270	1,233	1,119	5	208	208	1,239
64	Excavators ( <i>Tiefbau</i> ).....	390,622	4,926,672	47,569	26,403	11	128	221	1,452
	Total Trade Associations.....	.....	8,693,078	10,644	15,635	1,869	3,597	7,074	129,785
	II. Agricultural, Governmental, etc.....	.....	.....	.....	.....	839	2,450	4,263	35,178
	Grand Total, 1890.....	.....	13,619,750	58,213	42,088	2,708	6,047	11,337	157,963
	" " 1889.....	.....	13,374,566	35,392	31,449	2,908	5,260	10,594	143,425
	" " 1888.....	.....	10,343,678	20,556	21,236	3,692	7,764	7,764	116,821
	" " 1887.....	.....	4,121,537	7,914	17,102	3,166	3,270	7,083	98,477
	" " 1886.....	.....	3,725,313	177	10,540	1,778	2,716	5,935	89,619

## GERMAN ACCIDENT INSURANCE OF WORKINGMEN.

TABLE B. WAGES, RECEIPTS, AND DISBURSEMENTS FOR ACCIDENT INSURANCE, AND CONDITION OF RESERVE FUNDS IN 1890, AND RATIOS FOR 1889 AND 1890.

(The numbers in column one correspond to the trade associations whose names are given in table A.)

Number.	Receipts and Disbursements for Accident Insurance in the year 1890.										Amount in reserve fund at the close of the year 1890.		In the year— 1890—1889 There were for every thousand insured persons the following number of injured—			
	Receipts.			Disbursements for—				Additions to reserve funds		In general.			To whom indemnity was paid.	In general.	To whom indemnity was paid.	
	Accident indemnity.	Investigating accidents.	Adjudicating accidents.	Preventing accidents.	Expense of management	To whom indemnity was paid.	In general.	To whom indemnity was paid.	In general.		To whom indemnity was paid.					
												Thousand marks.				
1	358,908.5	5,854.5	3,059.6	80.4	33.8	14.7	218.3	2,447.7	12,134.7	72.5	8.5	72.0	8.4			
2	82,553.0	1,439.9	719.7	31.2	17.8	37.3	151.9	482.0	2,399.3	15.9	4.7	16.2	4.3			
3	53,664.1	207.6	69.1	2.6	1.8	3.3	44.4	86.4	343.4	21.5	2.9	19.0	2.5			
4	83,691.4	744.4	360.5	12.2	7.1	17.3	59.0	288.3	1,152.9	41.2	6.8	43.2	5.5			
5	27,197.6	268.0	134.2	1.5	1.5	6.0	17.5	107.3	521.0	100.4	5.8	99.2	5.5			
6	91,860.8	1,176.3	616.1	12.5	7.5	12.1	35.2	492.9	2,356.2	107.5	9.1	115.3	9.9			
7	70,650.2	716.2	351.5	5.2	5.5	10.7	63.2	280.1	1,187.2	54.9	7.0	53.9	6.6			
8	60,150.0	497.5	229.1	13.3	9.5	1.0	61.3	183.3	816.2	54.1	8.0	57.6	5.9			
9	51,765.3	454.3	215.4	6.8	6.3	5.0	48.5	172.3	729.2	54.5	7.0	53.8	6.1			
10	45,353.8	403.5	243.2	7.5	4.6	.....	43.6	194.6	827.4	59.6	7.6	58.3	6.4			
11	66,980.0	657.1	323.0	9.7	7.5	5.5	53.0	258.4	1,087.0	76.6	7.3	77.3	6.7			
12	31,821.8	107.3	34.8	0.9	0.6	1.6	17.3	52.1	193.1	12.5	2.2	9.2	1.3			
13	47,977.2	219.1	99.3	3.6	3.6	1.5	31.7	79.4	356.5	19.1	3.1	16.5	2.2			
14	15,774.8	66.9	26.9	0.7	0.6	0.6	16.6	21.5	92.4	9.0	2.2	9.6	1.8			
15	35,996.0	187.2	86.5	2.4	2.2	.....	26.9	69.2	305.8	13.6	2.5	14.4	2.0			
16	38,985.1	122.0	53.1	1.7	1.5	.....	23.0	42.5	177.0	8.3	1.7	8.9	1.4			
17	102,443.2	740.5	339.1	16.0	10.7	4.6	98.9	271.2	1,092.3	8.7	2.4	8.7	2.2			
18	79,602.3	934.8	470.4	18.3	10.5	44.4	126.0	295.2	1,673.0	42.8	6.4	43.2	5.6			
19	24,378.7	225.1	99.8	3.7	3.5	6.5	31.7	79.9	392.7	42.8	4.6	39.9	4.7			
20	22,414.5	117.0	53.1	0.9	1.2	1.2	18.2	42.4	188.7	13.1	2.7	13.0	3.0			
21	65,847.6	323.6	157.1	2.4	2.4	0.6	35.4	125.7	600.2	12.2	2.2	13.3	2.1			
22	43,754.0	193.0	90.1	2.1	1.0	1.3	26.4	72.1	430.8	13.2	2.6	12.0	2.5			
23	18,383.6	85.6	39.7	0.9	0.7	.....	12.5	31.8	140.6	8.4	2.3	8.3	2.9			
24	36,860.8	133.4	57.9	0.1	1.4	7.6	20.1	46.3	224.5	11.1	3.1	11.2	2.2			



25	72,132.9	335.1	151.9	2.5	2.8	16.7	39.7	121.5	536.1	14.9	2.4	15.2	2.4
26	81,464.3	308.9	145.4	8.2	2.3	0.3	36.4	116.3	497.2	9.4	2.1	9.1	1.9
27	20,542.6	47.3	20.5	0.3	0.7	0.1	9.3	16.4	80.7	5.4	0.7	4.8	1.4
28	33,540.2	501.2	289.6	7.9	5.2	2.6	54.1	191.7	888.8	33.3	7.2	31.3	6.6
29	41,358.4	167.7	60.4	2.4	1.7	8.7	46.2	48.3	200.9	13.3	2.4	13.0	2.4
30	37,475.4	237.8	107.3	3.6	3.1	1.3	36.6	85.9	339.3	16.8	3.6	15.2	3.1
31	13,883.4	139.7	64.1	5.3	1.4	2.8	14.9	51.2	235.5	29.5	5.7	27.2	4.8
32	92,278.8	1,096.3	526.2	17.8	11.3	15.6	104.4	421.0	1,744.3	33.1	8.9	33.3	7.0
33	15,334.4	225.0	110.8	0.2	1.0	3.8	20.6	88.6	367.9	38.5	11.4	37.3	7.7
34	19,455.0	202.5	89.6	3.8	2.3	4.6	30.5	37.6	377.0	21.0	5.3	20.1	6.0
35	51,778.8	985.7	407.7	19.4	14.7	18.8	198.9	326.2	1,576.9	27.0	8.4	26.7	7.5
36	38,397.6	269.1	115.4	6.6	5.4	8.3	46.0	92.3	367.5	19.4	5.0	18.3	4.6
37	39,059.0	515.2	249.6	14.5	3.2	.....	60.1	109.7	946.5	24.5	4.3	21.1	3.3
38	26,328.9	324.6	141.9	4.7	3.2	14.0	118.6	113.5	484.1	21.5	5.0	16.6	4.6
39	69,397.2	1,327.3	645.3	25.7	6.5	.....	27.3	516.3	3,161.7	66.5	11.9	65.6	10.7
40	50,783.8	68.5	21.7	0.7	0.8	0.6	23.6	17.4	87.2	2.3	0.4	2.3	0.4
41	58,272.2	132.3	56.6	2.6	1.9	.....	20.6	45.3	169.6	6.6	1.4	6.4	1.0
42	3,401.4	43.7	12.2	0.2	0.9	.....	67.8	9.8	49.8	13.7	1.9	15.0	3.1
43	39,255.6	538.5	256.2	5.5	3.6	.....	196.3	205.0	930.0	30.1	5.1	29.8	4.8
44	97,944.2	1,264.8	658.8	2.0	11.7	0.2	54.3	392.8	1,935.0	23.9	7.3	23.5	6.3
45	34,115.9	482.0	267.7	10.5	3.8	.....	69.6	145.7	592.1	24.5	6.4	21.9	4.6
46	40,208.3	434.1	197.2	4.9	4.7	.....	33.1	157.7	690.8	32.5	7.1	11.7	2.2
47	27,702.5	310.4	154.7	3.7	4.1	.....	78.4	114.8	494.5	11.0	2.0	8.9	2.0
48	67,028.6	656.0	300.8	16.4	7.3	14.2	29.5	238.9	1,080.7	25.9	4.8	24.3	3.8
49	14,323.1	152.1	74.7	3.2	1.9	0.1	58.1	49.7	250.6	18.7	5.1	18.1	4.4
50	33,381.3	295.3	187.7	6.6	6.2	0.6	95.5	36.1	497.5	26.2	5.3	33.2	4.6
51	65,771.9	791.1	404.1	9.4	7.3	2.5	24.0	278.3	1,146.9	53.4	5.8	23.6	5.6
52	14,931.6	200.2	95.6	2.2	1.3	0.3	48.9	76.8	307.0	21.5	6.9	23.1	5.6
53	47,125.3	769.8	439.9	3.3	0.9	2.9	49.7	273.9	1,075.8	34.4	8.2	35.1	6.6
54	26,537.1	345.6	154.7	7.7	2.8	7.0	42.3	123.7	614.6	26.1	6.4	29.0	5.6
55	57,499.2	159.3	63.9	1.4	1.6	0.8	16.0	50.3	225.2	11.7	1.9	8.4	1.4
56	21,453.5	281.2	143.6	2.7	3.7	0.3	18.6	114.9	520.1	41.4	5.5	36.3	4.7
57	14,321.4	105.1	46.5	1.6	1.1	.....	183.9	37.3	251.2	30.8	2.1	23.8	1.4
58	69,713.2	1,099.4	513.1	17.3	8.3	0.6	164.1	376.2	931.1	44.4	9.7	43.4	9.5
59	42,139.6	805.2	375.3	14.1	11.0	0.1	30.6	241.6	922.2	34.5	10.4	32.7	10.2
60	10,352.8	176.2	74.6	2.2	2.0	0.6	31.5	67.5	236.5	39.2	7.6	27.3	6.4
61	13,825.2	216.2	100.5	0.6	2.4	0.0	18.6	80.8	296.5	21.8	7.6	28.7	5.8
62	10,459.6	100.3	42.8	1.6	2.8	0.2	55.3	34.3	121.7	15.1	4.9	13.9	4.1
63	24,107.6	331.1	105.2	1.4	2.3	9.1	141.4	157.8	325.2	35.5	6.3	33.5	4.4
64	69,548.2	896.5	578.3	24.4	9.1	18.0	.....	123.3	275.4	16.6	7.2	18.9	6.0
Total.....	3,163,823.2	33,304.1	16,330.4	499.7	311.9	341.5	3,715.6	12,105.0	55,333.7	30.3	5.4	29.4	4.7
Agricultural, etc.													
Grand total...	1890	39,248.2	20,315.3	677.0	391.4	368.5	4,871.5	12,624.5	56,130.9	14.7	3.1	.....	.....
"	1889	33,148.3	14,464.3	443.3	350.1	324.1	4,379.4	12,967.1	42,175.0	.....	.....	.....	.....
"	1888	26,821.7	9,681.4	278.1	253.0	336.2	3,900.4	12,372.0	28,458.6	.....	.....	.....	.....
"	1887	19,732.6	5,932.9	158.7	215.7	366.7	3,123.4	9,935.4	15,723.8	.....	.....	.....	.....
"	1886	10,517.4	1,915.4	87.1	126.7	69.9	2,916.4	5,401.9	5,463.1	.....	.....	.....	.....

## RESULTS ACCOMPLISHED BY THE GERMAN ACCIDENT INSURANCE.

The practical working of the German accident insurance is shown by the two accompanying tables, A and B. They are taken from the *Statistisches Jahrbuch* of the German Empire for 1892. They exhibit the results obtained by the system for the year 1890. In that year there were in the nation 13,619,750 persons protected by the governmental accident insurance. The number of accidents disabling for less than thirteen weeks was 157,963. The persons thus injured were cared for and received benefits from the sick associations. They received no indemnity from the accident associations. The number injured, so that their disability lasted longer than thirteen weeks, was 42,038. These received indemnity from the accident insurance. So also did the heirs of the 2,708 persons who were killed by accident. Those heirs were entitled to receive pensions so long as they would naturally be dependent upon the support of the deceased. The terms of those pensions have already been described. The number who, in the year 1890, received those pensions, were 11,337. Those receiving permanent disability, such as the loss of a hand, foot, etc., are recipients of indemnity the balance of their lives. The number of those injured since the operation of the law, and who were receiving stated indemnity in 1890, were 58,213. Out of every one thousand persons insured only 14.7, on an average, or one in 65.3, were injured. Of that number only 3.1, or one for every 322.6, were disabled for more than thirteen weeks. In the sixty-four distinctively Trade associations referred to in the tables by name, associations whose beneficiaries correspond to our factory and mine operatives, there were 390,622 firms or establishments. They employed 4,926,672 persons on an average for the year. The wages received by these people amounted to 3,183,823,200 marks. (A mark is equivalent to 23.8 cents United States currency.) The employers in these trades expended for the support of the accident insurance of their workmen the sum of 33,304,100 marks. This was nearly 1.05 per cent. of the amount paid by them to their employes as wages. The percentage of insurance cost varied with the occupation. In some it was greater and in others less than the average above given. The Hamburg housebuilders paid for insurance 1.37 per cent. of the amount expended by them as wages. The rate usually charged a contractor and builder in Minnesota for simple employer's liability insurance is, at the present time, about one dollar per hundred of the pay roll, or one per cent. If that contractor takes out workingmen's insurance, securing his employes half wages for a year in case of accidental disability, the cost of that insurance and the employer's liability together amount to 1.87 per cent. of the annual wages. This is thirty per cent. more than the cost of the more perfect German insurance. A careful study of the facts relating to other trades or callings exhibits the

same state of affairs. Germany accomplishes these desirable ends for her employers and employes, because her laws free them from the burden of court expenses and lawyers fees, and expends the money thus saved for the benefit of the injured workmen or their heirs.

#### METHODS OF PAYING WAGES IN DANGEROUS OCCUPATIONS.

The money paid by the German employers for accident and sick insurance as that contributed by their employes for the latter of these two objects is a part of what political economists call "the wages fund." The theoretical "wages fund" of the writers is here, however, practically divided into two separate parts. One portion, consisting on an average for all occupations, of about 99 per cent. is paid directly to the workmen as compensation for services rendered. This is the only money to which any one, employer or employe, ever refers as wages. It, however, does not make up the whole of the wages fund of the political scientists. The other part of this fund, consisting of about one per cent. of the whole, is retained and administered as an insurance fund to protect the working people from financial loss by physical mishaps.

Here is a disposition or management of the wages fund practically very different from the one on which were based the early decisions of the British and American law courts already referred to. Those decisions declared, as is still claimed by some employers, that in accepting service in any occupation a workingman, by implication, contracted to assume all the hazard incident to that occupation. Those early decisions, in some respects, practically agree with the principles in accordance with which the German sick and accident insurance is administered. They agree in assuming that the natural risk or hazard of any occupation to the workingmen must be borne from the "wages fund" connected therewith. They further agree in the thought that, when once an employe has been paid in full all that by right or by law belongs to him out of that fund, he has no further legal or moral claim upon his employer therefor. He should not demand nor be able to collect any compensation for damages by accident in that occupation any more than he would be entitled to collect a part or the whole of his wages a second time when he had, by any mishap, lost it without the direct wrong doing of his master.

But while there is this general agreement between some of the theoretical principles of the German insurance and those involved in the early decisions of the law courts, adverse to the claims of the workingman, there is a wide separation in their real application in the two systems. In the accident insurance many practical questions are considered as well as the theoretical principles of political science and of common law. The workingman is in no respect paid a second time for any part or the whole of his compensation for labor performed. He does receive his indemnity for accidents from the wages fund. With these elements in the industrial world unaltered



the workingman secures a great practical gain because the method of wage payments is changed from the old arrangement and he receives his share of the wage fund in a manner more conducive to his permanent welfare, more satisfactory to his feelings and ambitions, and more promotive of the good of society. The change made is allied to the one which substitutes all cash for the old payment of wages by barter. Once all wage payments were made in the products of the field, shop or store. It was thus in the early days in Minnesota. Every large employer of labor at that time kept a store and paid his workmen in part, if not wholly, by the objects therein sold. That method of payment suited for one order of society has passed or is passing away. In Minnesota it has practically vanished without the intervention of statutes. In other communities it has had to be swept away by act of legislature. The fact is called up to show how a system of wage payments, when it becomes attended with evils in its operation or application, must be done away with. Wages must be paid, not only in full, but by methods conducive to the well-being of all. Abstract principles of law or political economy must be adjusted in practice or applied in ways which are found to be most promotive of these ends.

Other pages of this report have been devoted to showing how, when employers bare the financial risk of casualty with boiler insurance and elevator insurance, etc., the whole community, as well as the employer and employe, are benefitted. Much evidence of the same or allied character was presented in the same connection. In view of all that evidence it becomes clear that any system of wage payments, to be most conducive to the common well-being, must leave practically with the employers a large share of the financial responsibility for accidents to their workpeople. The method of such payments, presupposed by the old court decisions limiting the employer's liability in such cases, has then in actual practice been proved to be very defective. It leaves the responsibility in the wrong place and hence wherever, and so far as it is in actual use, delays the movement in the business world for lessening or preventing accidents. The method of wage payments involved in the operation of employer's liability laws is theoretically correct. It fails in practice, however, since the average injured workman only receives a small share of the compensation for injuries presupposed by the law. The law is a greater success in paying lawyers than for compensating disabled toilers. The system of wage payments involved in the German accident insurance is the only one thus far devised which practically secures this large financial responsibility of employers to their workmen. It retains in their hands a certain small share of the wages fund, about one per cent., to be administered by them for the payment of all damages to employes due to the hazard of the business. Under this arrangement the employers, as a class, at any given time, profit

financially by any changes in the business which lessen its hazard to life and limb. The workingmen gain correspondingly in their increased immunity from peril.

When all the wage fund is paid, as was presupposed by the old law decisions in one payment, the workman was often hurt under circumstances which sooner or later made him and his family paupers. An addition was thus made to the dependent class. Alms were supplied to them. The spirit of independent self-help was destroyed. Children came up educated as beggars and alms takers. They recruit a vast legion of the incompetents who, by receiving alms, are unfitted to successfully battle with life.

It was an apprehension of these facts which has led the working people in England and in America for more than fifty years to plead for a readjustment of the whole question. The work people have felt that the whole trouble came from the faulty decisions of the law courts. Hence, they have asked all these years for employer's liability laws. When one law failed in practice to help them, they have advocated some more stringent legislation of the same kind. The Germans tried to help their working people in this way and failed after a trial of twenty years. They saw that the trouble was not primarily with the law courts or legal decisions. It was with the methods of paying wages—of administering the wages fund. It was not a question of theoretical law for lawyers and judges to settle. It was a practical subject to be adjusted, if at all, by the aid of the business world, as we have settled in America the questions of responsibility in connection with steam boiler and elevator accidents. As an eminently practical people the Germans, when they perceived this fact, took the subject out of the domain of litigation, practically abolished employers' liability laws, and substituted their system of accident insurance.

Such a system of wage payment as is involved in this accident insurance of Germany does change, at the outset, in some occupations, the rate of compensation to work people to the extent of from one-half to three-fourths of one per cent. of the total wages paid in that occupation. Other occupations are not at the outset affected in the smallest degree by the change. But whatever may be the immediate effect in any occupation of such a law it permanently does not add to nor take from burdens resting upon the average employer, excepting as it lessens the number of accidents. No matter how wages are paid, whether in one sum to the employe or one part thus expended and another retained and administered for accident insurance, they will rise and fall and adjust themselves to the state of trade, the condition of the business of any given nation or occupation at any given time.

The introduction of the German insurance did lessen the number of injured persons cared for by the poor officers. Like boiler and elevator insurance in America it threw, in great degree, the responsibility for accidents upon the employers and with like beneficial results for all concerned.



## AMERICAN SICK AND ACCIDENT INSURANCE OF WORKINGMEN.

Hitherto little consideration has been paid in America to schemes of accident insurance for the workingmen, and for this reason: American as British workmen have been and are prejudiced against them. They are so prejudiced mainly because such insurance has been so often used as to remove all or nearly all of their employers' liability for their workmen's injuries. It has also been so used as to aid those employers in an effort to weaken and, if possible, to destroy the present organizations of labor. Those various systems of insurance and others, against which no objection can be urged, will now be briefly considered. Attention will first be given to certain voluntary associations of factory workers. Of these mention will be made of that among the employes of Barnard Bros. & Cope, of Minneapolis. The constitution, by-laws, and financial exhibit of this association are as follows:

THE WORKINGMAN'S MUTUAL BENEFIT AND AID ASSOCIATION  
OF BARNARD BROS. & COPE.

## CONSTITUTION.

ARTICLE 1. The object of this association shall be to help its members in the case of sickness or accident.

ART. 2. The officers of the association to be a president, vice-president, secretary and treasurer, and a board of four directors.

ART. 3. The president shall preside at all meetings of the association and shall maintain order, and in case of tie vote shall cast the deciding vote and shall countersign all orders on the treasurer for indemnity money.

ART. 4. The vice-president shall take the chair in the absence of the president and shall assume the duties of the president. He shall also act as chairman of the board of directors.

ART. 5. The secretary shall keep a record of the minutes of all meetings of the association, and all meetings of the board of directors, of which board he shall be a member ex-officio, and shall prepare a statement of the condition of the association on the first Saturday of April of each year.

ART. 6. The treasurer shall receive and deposit all moneys paid into the association, and shall pay out the same upon written order countersigned by the president, and shall render a statement of the finances of the association on the last Saturday of April, at the annual meeting of the association, for the previous year.

ART. 7. The board of directors shall be elected by acclamation and shall receive a majority of the votes cast to be elected. They shall hold office for one year, or until such time as their successors shall be elected. They shall decide on the fitness of candidates for membership and decide all claims against the association, and they shall have power to allow claims for indemnity where the doctor's certificate is lost, or not procured, only by unanimous consent of the whole board.

ART. 8. The officers shall be elected by ballot and shall receive a majority of the votes to be elected. They shall hold office for one year or until their successors shall be elected.

ART. 9. All elections shall take place on the first Saturday in April of each year.

ART. 10. The rules of the association may be changed at any regular meeting of the association by a two-thirds vote of the members of the association.

ART. 11. Regular meetings shall be held on the first Saturday in April. Special meetings may be called at any time by the president, or at the request of three or more members.



## BY-LAWS.

ARTICLE 1. The dues of the association shall be 35 cents a month for members of the first class and 17 cents for all members of the second class, and the dues shall be paid on the 15th of each month to the 15th of the next in advance.

ART. 2. The monthly dues to be deducted from the monthly pay roll of each member for the month before by the firm of Barnard Bros. & Cope, who shall deposit the same to the credit of the association in the Farmers and Mechanics Saving Bank.

ART. 3. And the firm of Barnard Bros. & Cope agree to do all necessary office work and bookkeeping, to keep the affairs of the association in proper shape without charge for the same.

ART. 4. In case of sickness or an accident causing inability to work, as shown by a doctor's certificate for a period amounting to not less than six (6) in any ten (10) consecutive days, counting Sunday in the ten (10) days, but not in the six (6) days, an indemnity of five dollars (\$5.00) a week for members of the first class, and two dollars and one-half (\$2.50) a week for all members of the second class, shall be paid for a period not exceeding ten (10) weeks. Fraction of a week where it is over six (6) days shall be paid pro rata.

ART. 5. In case of death of any member of the association resulting from sickness or an accident, a principal sum shall be paid as follows:

To the members of the first class (\$50) fifty dollars, and to the members of the second class (\$25) twenty-five dollars. The sum to be paid to the member's wife or legal representative, and in case of no relation being known, the association to pay the funeral expenses of the member.

ART. 6. Members shall be admitted when in good ordinary health, as determined by the Board of Directors, to the first class, where they receive not less than one dollar a day, and less than that to the second class.

ART. 7. In case any member shall be taken sick or shall meet with an accident, he shall at once notify the Board of Directors, who shall take such action as to secure him the benefit from the Association and decide if he be entitled to the same.

ART. 8. In case the amount in the treasury at any time is not sufficient to meet the demands of the Association, the money shall be raised by an assessment of twenty-five (25) cents on each member.

ART. 9. In case any member shall stop the payment of his dues, he shall forfeit all right to aid from the Association after that time, and his name shall be dropped from the rolls.

ART. 10. Any member leaving, or for any cause discontinuing to work for the firm of Barnard Bros. & Cope, forfeits all right to the aid of the Association after such time of leaving.

ART. 11. No member of the Association shall be entitled to any aid from the Association, when the sickness or accident is the result of the use of intoxicating liquors, or is caused by some unlawful act on the part of the member.

ART. 12. Members on joining the Association shall give their residence and address to one of the Board of Directors, and in case of removal to another place, shall notify Directors of the new address, and the Board of Directors shall keep a correct list of the members and their residence and addresses.

This association was organized April 3, 1886, and has been in operation since that time. At the outset the dues were not sufficient to meet all demands and the firm made a present to it of one hundred dollars. Then the dues were advanced somewhat to the figures given in article one of the by-laws, and since that time the Association has met all liabilities and accumulated a small surplus as is shown by the following financial exhibit.

Receipts and disbursements of moneys and the number of benefits paid by the Workingman's Mutual Benefit and Aid Association of Barnard Bros. & Cope, for each of the years

since its establishment. The financial year closes with the annual meeting which is usually held the first Saturday in April. These statements are for the year just closing. In 1891 the annual meeting was held May 16, and thus the report for that year includes a larger number of months and that for 1892 a smaller than would otherwise appear. This explains in part the large payments of 1891.

Year.	RECEIPTS.		Disbursements.	Balance on hand.	No. of benefits paid.
	Assessments.	Interest.			
1886	.....	.....	\$16.30	.....	.....
1887	.....	.....	269.93	.....	.....
1888	.....	.....	259.17	.....	.....
1889	.....	.....	189.28	\$216.78	.....
1890	\$333.21	.....	271.94	278.05	29
1891	464.23	\$11.87	550.71	206.99	41
1892	458.42	8.22	283.91	389.72	29

Since the establishment of the association there has been but one death which occurred in the financial year closing in 1892. At the present time all the employes of the firm are required to be members of the Association and one of the members of the firm acts as treasurer. All other officers are workmen and the employes are left perfectly free to select such officers as they prefer, and those thus selected have the full direction of all the affairs of the association.

Organizations somewhat similar to the foregoing in the factory of Barnard Bros. & Cope exist in the factories of Johnson & Hurd, of Minneapolis, of the Luger Furniture Factory of North St. Paul, of the North St. Paul Table Works, and in many other establishments in the State. In some of these associations, as with the one given above, a member of the firm acts as treasurer and keeps all the financial accounts. In others the workmen elect all their officers from their own ranks and care for all moneys. In some the employing firm makes regular contributions to the funds of the society. In others they contribute nothing and only pay to the appointed treasurer the sums which they are authorized to deduct from the wages of each workman for that purpose. The practical working of these voluntary associations corresponds quite closely to that of the sick benefit insurance of Germany. The difference consists in this: The American societies are mainly, if not wholly, supported by the contributions of the employes. The German societies are under legal supervision and by law the employers are compelled to contribute to their maintenance.

#### INSURANCE USED TO DEFRAUD THE WORKINGMAN.

These small voluntary associations and benevolent fraternities like the Odd Fellows may be used to illustrate the objections which so many American working people have to accident insurance when it is offered as a substitute for stringent employer's liability laws. Here are societies wholly managed

and supported by the contributions of the working people. They exist for the protection of the workers and their families against certain evils following sickness and accidents. The men pay in their money to secure this protection. One of their number is hurt and is totally disabled or dies. Such a workman may have been hurt by the gross neglect of his employer or as the result of some faulty order of that employer. Such accidents frequently happen and the law in either case makes the master legally responsible for the damage caused to the workman. But suppose, when the injured workman or his heirs come to draw the small sick or funeral benefit provided by the association, the employer should object to having the claim paid. Suppose the employer, as Barnard Bros. & Cope, was treasurer and should say, "you can have the money by signing a receipt therefor and also executing a paper releasing me in full for all your legal claims upon me for the injury or for back wages." Every one would cry out against the injustice as well as the petty meanness of the act. The back wages belonged to the workman because he had earned them. The benefit of the society belonged to him since he had paid for it with his own money. The wages were earned under an express contract that they should be paid when the work was done. The sick benefits of the society were in like manner paid for with the understanding that the money was contributed for the protection of the member. The money belonged to the workman no matter whether he had paid it to one of these factory societies or to the Odd Fellows or other kindred fraternity. The man has paid his money for certain protection for himself and family. The employer of this man may have been the treasurer of the factory society, or of the Odd Fellows. He holds money in trust for a specified purpose. He must not use or rather abuse his position to collect debts from another or employ the money in his possession for his own use, much less to protect himself from the results of his own criminal act or neglect. The same principle applies to any moneys, however raised, for a specified purpose and deposited in the hands of another as trustee. The foregoing discussion of the unknown abuse of the funds of the Odd Fellows and of these small factory associations has been presented to show the character of the objection of the American workman to much of the accident insurance to which he is asked or compelled by his employer to contribute.

#### EMPLOYER'S LIABILITY INSURANCE.

The average employer has of recent years protected himself against damage suits by his injured workmen by employers' liability insurance. He pays therefor a certain number of cents, varying according to the hazard of the occupation, upon every hundred dollars of his pay roll. This form of insurance protects the employer as it was designed. Of itself it tends to make the selfish employer less careful than he otherwise would



be with reference to dangerous machinery. This feature of this form of insurance has already been passed in review. It suffices to say it protects the employer but does not benefit the employe. Many years ago this fact was perceived by many generous hearted employers. They were not content to thus protect themselves. They believed that they should do something for their workmen as well. They purchased from the proper companies insurance to a small extent assuring their employes half wages while injured by accident and otherwise protecting them. This was an act of justice and, like all honest and true acts in the domain of labor, it proved to be a wise one. The ill-feeling between employer and employe was lessened and the injured were not as apt as before to sue their employer. The insurance companies found the hazard of employers' liability only one-half as great with those who were thus trying to do right as it was with others. For those who insured their workmen the companies therefore reduced the former rate for employers' liability insurance one-half. This was all right, but the fact was made use of by selfish employers to introduce a mischievous practice in the business world. They took out the same form of policy of workmen's insurance, but made their employes pay for the same. Ofttimes these men go farther and collect from their workmen enough to pay for all the insurance given and also to pay the second half of their own liability insurance.

The statement is made to the men, when they are asked or required to authorize the expenditure of a certain part of their wages every month, that it is to purchase insurance for them. Nothing is ever said about any other object. The insurance policies expressly call, in this class of insurance, the employer a trustee for his employes. He, by collecting money under the statements which he holds out in person or by his agents in the transaction, makes himself the custodian of trust funds as truly as does the treasurer of the Odd Fellows or of one of these factory associations. To use that money thus placed in his keeping by the men for any other purpose than the one expressed in the statements made to the men is wrong. It is a violation of the principle of a trust, an abuse of trust funds.

The workmen pay money for a certain object. They should have what they pay for. The employer should be entitled to no more. If, with his own money, he pays for a certain amount of indemnity insurance, he is entitled to it. He must not use the money of his employes in his hands as trustee to directly or indirectly purchase that indemnity. In the old days of barter, if a business man had a chance to pay one of his debts or obligations by the transfer of some goods which were owned at the time by his neighbor, he could do so. He must, however, first buy the goods before he could use them in the trade to lessen or discharge his obligation. He was not authorized to rob Peter to pay Paul. So in this matter of indemnity insurance. The liability resting upon an employer by reason

of the laws of the land is an obligation. If an employer wishes to lessen or discharge it in a way which wrongs no other, he may do so. If he wishes to lessen it one-half by a trade wherein he uses a scheme of insurance for his workmen, he should be entitled so to do. One condition only should be prescribed, and that is the old one of the barter. The employer must not be allowed to steal the capital on which he trades. He must, in other words, pay for the workingman's insurance which he uses to lessen his first liability,—his employers' liability insurance premium. If the employer desires protection from that liability, let him pay for it out of his own money as his workman must pay for his meat, clothes, and doctor. The employer should never be permitted in this land of fair play to require, compel, or delude his workmen into a systematic payment or discharge of his own liability. The man of capital should not complain of the hardship of paying his own debts.

Let the foregoing abstract principle be illustrated by a concrete example from the modern business world. A certain class of employers are engaged in an occupation such that to insure themselves against their liability as employers they must pay a premium of one dollar on every hundred of their annual pay roll. If now one of these employers wishes to take out insurance for his workmen, guaranteeing them one-half pay for a year's disability, he would have to pay for the liability insurance and that of his workmen together the sum of \$1.87 a hundred on his annual pay roll. Of this sum one dollar represents the actual risk of the employer by reason of his liability under the law, the balance expresses the workingman's share of the twofold insurance. To be sure these are not the respective considerations stated in the two policies which are written in such cases. The premium for the indemnity policy is therein said to be fifty cents a hundred, and that in the workingman's to be \$1.37. None the less the actual consideration, because real worth of cost, of the employer's policy is, as stated above, one dollar a hundred. In reducing the amount paid therefor to fifty cents by the arrangement described, the employer indirectly causes his workingmen to pay for one-half of his bills. Here lies the actual motive in most instances for compelling the men to pay for this class of workingmen's insurance. Not one out of a hundred employers, who compel their employees to pay for this insurance, would so constrain their action did not this transaction lessen their own insurance bills as previously described.

#### A WRONG DONE TO WORKINGMEN.

Now, the above mentioned business arrangement, though the opposite of generous, is possibly strictly legal. It is making the poor man pay the debts of the rich; the toiler to settle in part the obligations of the capitalist. It is wrong in principle, and, like all evil acts, opens the door to positive fraud and criminal wrong doing. The act is contrary to the spirit of



law and justice, though, perhaps, within the strict letter of legal rules and maxims. The wrong drift of the whole transaction is seen in the criminal acts to which it at last leads some few employers. Not content with collecting from their men the whole premium required for the workingmen's insurance, they collect from them a larger amount, a part of which they then convert to their own use. Thus, when the actual amount required each month to pay the premium of the average worker in a given factory is 41 cents, the employer collects fifty cents. The insurance agent advises him so to do because it is easier to keep account of even dimes than of odd cents. Nothing is ever said to the employes about this excess. It is not preserved in a reserve fund for their benefit. The odd cents are never carried to their account in the next year's insurance, but are made to appear in the profit account of the employer. The total amount thus collected, in small monthly installments by some employers, is sufficient to half or wholly pay for the employer's personal liability insurance. All this is done without the knowledge or consent of the contributing workingman. He supposes that all the money collected from him goes to pay for his own insurance, and does not know that any part of it is expended for the benefit of his employer.

Now, whether the sum collected from the workingmen under a partial or untrue statement of the facts is large or small, matters but little. If the employer collects money from his workingmen and keeps back or conceals, or misstates some of the facts about its final disposition, he is obtaining money under false representations. The insurance policy calls him a trustee for his workingman. If, as a trustee, he collects money from his workingmen and for their use and then uses any part of that money for his benefit he has violated his trust. In either case he has placed himself on very questionable ground. It is well to note the wording of the Minnesota Criminal Code in relation to these subjects. That Code says, section 415, that "a person who, with the intent \* \* \* to appropriate the same to the use of the taker \* \* \* obtains from such possession by color or aid of fraudulent or false representation or pretense \* \* \* or appropriates to his own use, \* \* \* any money, personal property; \* \* \* or as trustee \* \* \* or as a person authorized by agreement, \* \* \* to hold or take such possession, custody or control, any money, \* \* \* appropriates the same to his own use, or that of any person other than the true owner or person entitled to the benefit thereof, steals such property and is guilty of larceny."

Can the prudent business man, in view of the provisions of the foregoing sections of the Criminal Code, and in the presence of all the possible labor troubles of the generation, afford to collect one cent more from his employes than he expends directly for their insurance? Can the honest, well meaning employer afford to compel his employes to pay for one kind of



insurance for themselves in order that he may save on another? Can he truthfully say that he has a right to compel, under any circumstances, his employe to pay the whole or any part of any of his bills, such as that for his employer's liability? Is it public policy to allow any of these transactions? This last question is one for the legislature and the courts to pass upon. The Bureau of Labor in this report has striven to present all the facts which may have a bearing upon the subject. The following must be added to those preceding to make a complete statement of the wrongs in the insurance world to which the poor workman objects and from which many of them suffer at the present.

Some employers and some insurance companies, when a workman is injured and comes to receive the accident payment promised in the policy, insist upon a condition which was not in the policy, nor in any verbal contract made at the collection of the premium. The employer at such time says to the man: "Here is your money. You can have it if you will sign this receipt which releases the insurance company for the insurance and also releases me from all legal liability by reason of your hurt." The workman may say: "I do not know whether I have any legal or moral claim against you. I do not know whether it will pay to press a suit against you or even to ask you to do anything for me. But that is nothing which concerns this settlement of insurance. I paid for the insurance with my money as I earned my wages by my work. It is wrong to keep me out of my just dues because I will not sign a release for some other claim." The employer will not argue the case. He simply says: "Here is your money, sign the release and you can have it. If not, you can have nothing from me without a law-suit." The workman is poor and cannot afford a law-suit. He signs the release and hence surrenders his legal rights—forced thereto by his necessities.

It is an unjust condition of affairs. These insurance policies call the employer a trustee for the benefit of his workmen. The transaction does make him legally as well as morally a trustee to carry out the terms of his contract in accordance with which he collected certain sums each month from his subordinates. There were but two conditions to that contract. The men were to pay certain sums each month. In return they were to receive certain other sums in the event of injury by accident. The employer, as trustee, violates his trust when he fails to pay to the injured workman the money in accordance with the conditions of the original stipulation. To demand a release from employers' liability before any money shall be paid is to change the insurance contract. It is a transaction which no court of law would sustain. The employer has no more right thus to withhold insurance money in his hands as trustee for his men than he would if he were treasurer of the Odd Fellows. He can not legally mix his private affairs up with his duties as treasurer or trustee of trust funds.

The present abuses of this last description are happily few in number, but the legislature should provide against their growth in the future.

#### ACCIDENT INSURANCE AND LIABILITY LAWS.

The average American wage worker is prejudiced against accident insurance. The cause of that prejudice lies in his knowledge of just such abuses and wrongs of the system as have been detailed above. He sees and feels the injustice in many of these acts and looks for relief to new and more stringent liability laws to be enacted. But can not the idea of accident insurance in America be freed from these incidental evils and wrongs and be made as beneficent a factor for good as in Germany? This is a question which is forcing itself upon the attention of every thoughtful man who has given consideration to the subject. The fact is, that without regard to past legislation, and sometimes in spite of it, accident insurance is, in America, displacing employers' liability in practice. It is the same in every civilized country at the present.

A third, at least, of the larger factory owners in Minnesota have introduced some form of insurance for their men. By that insurance the employers practically do away with the scope of liability laws in nine out of every ten accidents. They also reduce, by the same arrangement, their financial liability one-half. The movement of which this is a part is growing every year. Accident insurance is bound, in some form or other, to ultimately supplant employers' liability laws in the United States as it already has in Germany. Shall the whole subject be left to the unguided and uncontrolled acts of employers under circumstances such that the most selfish and grasping of their number fix the customs of the community? This is the situation at the present. The fair-minded man starts out by paying for his workingman's insurance, because he knows it is just and right. His selfish competitor makes his men pay for all this. The difference, in some of the Minnesota factories, exceeds a thousand of dollars a year. Competition in the business world at last forces the just man to the pattern of the mean one or he must go to the wall. Cannot this situation be improved? Shall not the wrongs just described be remedied by legislation? Let the law establish just regulations concerning employers accident insurance. Let it require from employers an amount of insurance which will meet the needs and just claims of all injured workers. Then let it establish rules whereby the cost of that insurance shall be equitably divided between the employer and employe. Thus, and thus only, can be removed the evils and defects of present liability laws and the wrongs perpetuated in the name of an unregulated accident insurance for workingmen.

## REQUIREMENTS FOR A GOOD INSURANCE SYSTEM.

The present liability laws of Minnesota establish \$5,000 as the maximum sum to be collected as damage in a suit when a person has been killed by the act or neglect of another. This is about ten years wages of the average factory worker in the State. Let this sum be made the basis for estimating the amount of accident insurance to be provided for the workingman in dangerous occupations. The toiler should, as in Germany, be assured, in the event of his total disability from work, from one-half to two-thirds his wages so long as the disability lasted. If killed, let his heirs receive, in one form or other, the equivalent of ten years wages. If he loses both hands, or both feet, or both eyes, or one hand and one foot, one foot and one eye, or similar total permanent disability, let him receive the same as is granted in the case of death. In the case of death, or this total permanent disability, the indemnity could be given, as might be proven by experience most desirable, in one sum or payment, or, as in Germany, in the form of a life annuity or pension. There should be fixed other payments of lesser amounts in the event of permanent disability of a lesser degree as the loss of one foot, or one eye, etc. Such insurance should protect the toiler at home or on the street, as well as in or about his master's place of work or business. It should, as modern fire insurance, protect him against his own neglects and defaults as well as against those of his employer. For the maintenance of such a system of protection, let the workman pay his just share of the needed premiums. The injured workman, in Germany, for his sick and accident insurance, pays one-third of the cost and the employers the balance,—two-thirds. This may or may not be the true proportion. Time and experience can alone definitely determine this question. If American employers' liability laws were very strict, as much so as were the German in 1883, then the German rule of requiring two-thirds of the cost of accident insurance to be borne by the employer would possibly be just. On the basis of the legislation established in 1887 in Minnesota, fixing the liability of railways towards their workmen, the just proportion for such an insurance fund would doubtless be, for factory workmen, one-half each for employers and employes, and for those in the train service on railroads the same as in Germany, two-thirds for the employer and one-third for the employe. Such insurance would, as has been previously shown, give to the average operative from six to eight times the actual benefit or protection derived from the ordinary employers' liability laws of the United States. How would it affect the employers?

## EQUITABLE ACCIDENT ASSURANCE AND THE EMPLOYERS.

The occupation previously referred to, and for which some figures have already been given, will be recalled in this connection. Employer's liability insurance costs one dollar a hundred of the annual pay roll. Workingman's insurance, guar-



anteeing one-half year's wages in case of total disability or death, would cost, with the liability insurance, \$1.89 a hundred. This Bureau has not been able to ascertain exactly the cost of a policy guaranteeing ten years' wages to the insured in case of death or total disability and corresponding lesser amounts in the event of minor injuries. The cost of such insurance for the given occupation in the city of Hamburg, under the German accident insurance, is \$1.37 per hundred of the workingmens' wages. Under our legislation and usages exempting employers from so much of their just share of responsibility to injured workmen, we have far more accidents in any occupation in America than in the same kind of business in Germany. Hence the cost of accident insurance at first must be greater here than there. Several other factors might be referred to which have the same general tendency of adding to the present cost of accident insurance in Minnesota as compared to Hamburg. Possibly the cost here would be nearly three times what it is there. Assuming this large excess of cost of insurance here, we have, as the cost of insuring ten years' wages to the injured factory worker, the sum of \$4.10 per hundred of the annual pay roll. This estimate is based upon the supposition that it is secured wholesale, as is the present employes' insurance in factories by their employers. If one-half of this \$4.10 were paid by the employers and the other by the employes, each would have to pay annually \$2.05 per hundred of the annual wages of the operator. This is four times what is now paid by the employer who compels his workmen to pay one-half of his liability by means of the insurance to which he contributes. It is twice what the employer now expends who only bothers himself with a policy for employer's liability. It is substantially the same, though a trifle more, than the best and most generous-hearted of our employers are now doing for their work people.

To establish by law a system of accident insurance, guaranteeing ten years wages in case of death, etc., and have one-half or two-thirds of the resulting cost borne by the employers and the balance by the employes, would, at the outset, require all employers to do for their wage earners the equivalent of what is now thus done by the best men in our midst. It would be to level up in the industrial world. No longer would the most selfish man, as now, determine what shall be done for the injured workman. The law of uncontrolled competition, which now gives the advantage, in the business world, to the most unscrupulous employer, would be displaced by statutory regulations as in Germany. These would make the schemer conform his attitude towards his work people to the standard voluntarily established by the best employers in the same relations. This would be a large gain to the community, and in the course of a few years would greatly lessen the present friction and discontent in the labor world. Not only would these beneficent results follow this class of legislation in America as in Germany,

there would also, in a few years, be a lessening of the financial burden now resting by law upon the employer by reason of injuries to his work people. This reduction would follow from the decrease which would be secured in the present cost of administering accident insurance. This is needlessly large in America and greatly in excess of the same expense in Germany. This difference can best be illustrated by the following table. It is compiled from official American and German insurance reports.

COST OF MANAGING AMERICAN AND GERMAN ACCIDENT INSURANCE.

NAME OF COMPANY.	Total accident premiums received.	Net amount paid for losses.	Total expenses of manage- ment.	Percentages.		
				Part of pre- mium paid for losses.	Ratio of ex- penses to Losses.	Ratio of ex- penses to premiums.
Americal Casulty and Security...	\$1,303,973	\$317,302	\$784,596	24.3	247.3	60.1
American Employers Liability....	187,814	46,016	76,358	24.4	165.9	40.6
Employers Liability.....	822,312	438,418	381,680	53.3	87.1	46.4
Equitable Accident.....	106,894	48,861	54,946	45.6	112.9	51.4
Fidelity and Casualty.....	1,865,333	679,707	979,298	36.4	144.1	51.9
Standard Life and Accident.....	653,443	306,159	314,322	46.8	102.6	48.1
St. Paul German Accident.....	56,177	19,958	41,792	35.5	209.4	74.4
Total Seven American Com- panies.....	\$4,995,946	\$1,856,421	\$2,632,992	37.3	141.8	52.7
Total German Accidental busi- ness for 1890, (in thousand marks)	39,248.2	20,315.3	5,939.9	51.7	29.2	15.1

In compiling the foregoing table, from official reports, there are included from the American companies, under the head of total expense of management, all expenditures with the exception of sums paid as dividends on stock. In the German, with the same title, are included what are given under cost of management of investigation and adjustment of claims. In some American companies the sums received for interest and paid for dividends on stock are such that the foregoing statement does not really include all their expenses which are provided for the premiums. The resulting error, in comparison with the German insurance, is balanced, however, by other differences in the methods of making up the German and American official reports. The foregoing may then be taken as an approximately just comparison of the economic results following the present administration of accident assurance in the two countries named.

If the cost of management in America were no greater than it is in Germany, then, for the seven companies named above, that cost would have been decreased, in 1891, \$1,878,605. This would make it \$754,387 instead as now \$2,632,992. The difference is a sum in excess of the amount now paid for indemnity for injuries. This saving would reduce the cost of insurance, other factors remaining the same, over thirty-five per cent.

But with a wise system of accident insurance, through proper expenditures for eliminating accidents, there would be a sufficient lessening of casualties to cause, with the reduced expenses, a saving of one-half of the present net cost of insurance for employers and employes alike. The employer would obtain complete immunity from all legal liabilities and from all vexatious litigation at an annual expenditure no greater than the present cost of employer's liability insurance. In other words, the employer as well as the employe would be a gainer by the introduction of a proper system of accident insurance.

#### CHARACTER OF NEEDED LEGISLATION.

Accident insurance can be and will be generally introduced in either one of two ways. It may, as in Germany, be brought about directly by legislation making it compulsory upon every employer and employe in certain occupations. Then it can be indirectly secured by the operation of employer's liability laws. If the first method was adopted a law must be enacted modeled after the general features of the German law, and yet with those features modified to accommodate them to the social and economical situation in the United States. Such a law would, for a time, meet in America, as it did at first in Germany, with much opposition, both from employers and employes. United States Consul Miller, in his report to this government in 1887, details the objections and difficulties which had to be overcome before the present satisfactory working of the law was secured in Germany. He states that before the passage of the law, in 1884, scheming employers had raised, by co-operation, insurance funds, which they used to constrain their work people to remain in their service and to weaken the organizations of those work people. When the government established other insurance funds the latter did "not see at once that the new law, by introducing a uniform standard for the whole Empire, rendered the masters powerless to use the fund as a weapon in industrial warfare." Hence their objection to the law at the outset. All that has happily passed away under the beneficent operation of the law.

Some employers in Germany also bitterly opposed the law for several years. They were reluctant to accept the duties imposed by it upon themselves. In the past they had given thought, and that successfully, to the evasion of previous legislation for the regulation of employer's liability. But here was a law so simple and direct that no evasion was possible. Hence their objection. The passage of years has, in Germany, modified the objection of even this class of employers. The law has largely removed litigation over damages to injured workmen. It has done away, in large measure, with the old bitterness of feeling growing out of the former attitude of labor and capital upon this subject.

Such or similar effects would doubtless attend the passage and operation of any general system of accident insurance in



Minnesota, or in any other state in our Union. There would first be the objections from working people and employers. The first from those of their number who have been and are prejudiced against accident assurance by reason of the abuses thereof which they have been forced to endure at the dictation of their employers. But if the experience of Germany counts for anything, in contrast with that of all nations with employer's liability laws, it can confidently be predicted that in a few years the prejudice and objection would vanish.

#### VOLUNTARY ACCIDENT ASSOCIATIONS.

The German people make their sick and accident insurance obligatory upon all. But probably the best success in this field in America would follow a law which prohibited the present abuses of accident insurance and yet permitted, under proper regulations, the employers of the state voluntarily to organize accident associations similar to those made obligatory in Germany. To this end the employers of the state, or any number of them so desiring, should be authorized to form an association for assuring their work people in case of casualty. The persons so associating should have authority to establish by-laws and rules for the collection of money and its disbursement, and the election of officers, etc. They should fix the ratio of payment and collect the needed dues from the several employers, and through them from their employes. Such a society should be authorized and required to collect sufficient funds to insure every employe in the pay of the incorporators for ten years' wages in the event of his death or total permanent disability from accident.

Smaller and equally just provisions should be guaranteed for those suffering from any lesser disability. The insurance fund of such a voluntary association should be secured from equal contributions thereto by employers and employes, or two-thirds by the employers and the balance by the employes, as might be decided to be most just or expedient. The Commissioner of Insurance or the Commissioner of the Bureau of Labor Statistics, one or both, should assist in establishing, from year to year, the rates to be contributed by the several members of the association. They should also receive reports of all financial transactions of the association and have authority to prevent the expenditure of moneys for purposes not contemplated in the act. Employers organizing under the provisions of such a law and complying with the same should be exempt from all legal liability for accidental injuries to their workmen, except in instances where the employer is guilty of such acts or neglects towards his workmen as to lead to his prosecution and conviction in the criminal courts of the land. Such voluntary associations should be authorized and directed to arrange their assessments so as to accumulate a sufficient reserve fund to guard against any unforeseen contingency. Such reserve funds and all other assets of the association should be exempt from taxation.

## EMPLOYERS' LIABILITY LAWS.

But few, at the present time, could probably be found in Minnesota who would favor a compulsory system of accident insurance. Not all persons would be satisfied with organizing such a voluntary association as has just been described. Many in our midst will, for many years, look to employer's liability laws for the relief of working people who have suffered physical injury while following their usual avocations. Such laws will be enacted for some years yet in many states. They will all foster one of two systems of accident insurance either directly or indirectly. If these liability laws are silent upon the subject of accident insurance, they will more and more induce employers to introduce and develop some of the various forms of such insurance as have been described in this report. By them they will practically nullify their individual obligations under the statutes. They will make the employes pay for their master's liability under the law. The more stringent the statute in other respects, the more incentive and hence the more power will the employers have to thus use insurance to transfer their own burdens upon their wage earners. In practice, then, the workman will never have his choice between accident insurance and the benefits of employer's liability laws. The trend of the business world, the acts of the large employers of labor alike, are slowly creating a condition such that the only choice offered is that between legitimate and regulated insurance on the one hand and illegitimate on the other. Liability laws, silent about accident insurance, foster that insurance under circumstances fraught with evil to the average toiler.

To protect the workingmen from the present abuses of this character liability laws should prohibit the following acts: (1) Employers should be forbidden to collect money from their employes for accident insurance unless the employer has first contributed sufficient for that purpose to guarantee an injured person one-half wages for a period of one year in case of death or permanent total disability, and one-half wages for all time lost by lesser accidents. When the employer has thus contributed for this amount of insurance for his workingmen against accident he should be permitted to collect from them certain sums for the same purpose providing, however, he contributes to the same funds like amounts to those thus collected from them. Further, such liability laws could wisely exempt any employer from the damages collectible from him under their provisions in the event of his securing by this method an insurance for his workmen of ten years wages in case of death, etc., etc.

Such accident insurance should all be reported to the Commissioner of Insurance or of the Bureau of Labor Statistics as in the case of a voluntary association already referred to. The same officials of state should have authority to examine all accounts of such insurance and correct all abuses as in the other instance.

## CONCLUSIONS.

An insurance law authorizing voluntary associations of employers for insuring their workmen and a good employer's liability law, with provisions as above set forth, would doubtless jointly open the way for an early development of the true American system of dealing with damages resulting from injuries to the nation's toilers. Each of the two laws would attract the attention of a particular class of employers and employes. The end sought by both is the complete protection of the workingmen and working women from their individual shares of the enormous waste of \$150,000,000 by accidents in the land each year. These ends should be sought by ways least burdensome to capital and by methods in accordance with settled maxims of justice and equity. It should also be adjusted with a view of lessening the present friction between labor and capital. Cannot these ends be secured by such legislation as has been described in this chapter? Laws seeking to do away with wrongs now existing in our midst and herein narrated at length, and giving the largest possible choice to employers in adopting means and ways for fulfilling their obligations to the workingmen?



## PART II.

# INVENTIONS IN FLOUR MAKING MACHINERY AND THE PRICES OF WHEAT, FLOUR, ETC.

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### INTRODUCTORY.

#### THE INDUSTRIAL REVOLUTION CAUSED BY MACHINERY.

During the last half century the industrial and commercial organization of society has undergone a complete revolution owing to the mechanical inventions and scientific discoveries and kindred elements of progress which those fifty years have produced. The railroad and steam-boat make Minnesota and the Dakotas the wheat fields of London and of Europe. The steam engine and machinery oft enabled one person to perform the labor which was once sufficient to absorb the time and energies of more than a hundred. Some callings have been more affected by this introduction of machinery than others, and yet scarcely an industry can be found in which muscular labor has not been more or less displaced by the introduction of labor saving machinery. The fact that machinery tended to displace human labor, led the toilers, as a whole, in the past, to object to its introduction. Often in those times mobs attacked factories and destroyed the new labor saving devices. Such destruction of machinery is seldom heard of in the present. With the passage of the years the objection of the toilers to labor saving devices becomes less and less pronounced. Many causes have conspired to bring about this result. In this generation invention has followed invention so rapidly that new avenues of employment have been created about as fast as the old ones have been destroyed. And yet, wherever labor has been displaced by invention or discovery, there is always produced more or less temporary loss of employment and consequent suffering. There is always thus a loss as well as a gain to the earths' toilers from each and every invention which changes the methods of conducting industry or commerce. It is easy to see a part of these changes and so form a judgment very laudatory of the present. It is quite possible to trace other and opposite effects and frame a jeremiad indictment of all progress. Not one side but all phases of human life and activity should be considered.

The real test of all inventions and discoveries at last is this: How have they affected for good or ill the life of the millions? Who have profited most by them, the few rich or the many poor? Not only are wages and hours of labor to be considered, but methods of living, the food and clothes, the comforts and luxuries for high and low, cultured and ignorant.

Agriculture is the greatest single industry in the State of Minnesota. Wheat has been and still is the leading cereal raised by the farmers in its borders. As wheat raising is the greatest factor in the labor of the farmers of the State, so the production of flour is one of the leading manufacturing enterprises in the commonwealth. The millers of Minnesota led in the introduction and development of the modern system of making flour. That system has displaced the old stones for grinding grain and substituted for them a combination of hardened steel rollers. It has introduced countless new devices and inventions and applied many of the discoveries of modern science to the work of making good flour. But how have all these inventions and changes, which received their first impetus for development in Minnesota, affected society? This is the leading subject of the investigation whose results are included in the pages of this part of the report. That this subject may be exhibited in all its relations, it has been deemed desirable to give in this connection a brief summary of the different methods of manufacturing flour in all ages.

#### PRIMITIVE METHODS OF MAKING FLOUR.

The earliest apparatus for making meal of the various grains used for food was some form of what is called in modern life a mortar. Originally this was constructed of a hollow stone in which the grain was pounded. Two forms of this earlier apparatus are shown in figures 1 and 2. Figure 1 is "a knocking

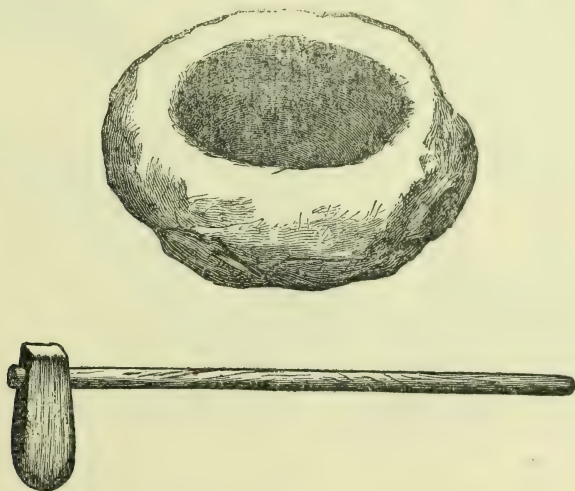


FIGURE 1. "KNOCKING STANE" AND MALLET FROM SHETLAND.



stane or stone" from the island of Shetland. Into the hollow cup in the stone the grain is placed and is then repeatedly struck by a wooden mallet also shown in the figure. As the blows fall, many of the grains start out of the cup, but a woman or child, sitting opposite the man who wields the mallet, keeps constantly putting them back. Anything ruder than this way of making meal or flour cannot readily be found. And yet this implement is still in use in some parts of Scotland today for grinding barley, or making pot barley as it is called. Rude as it appears, this apparatus can be made to do fairly good work in the hands of a skillful operator.

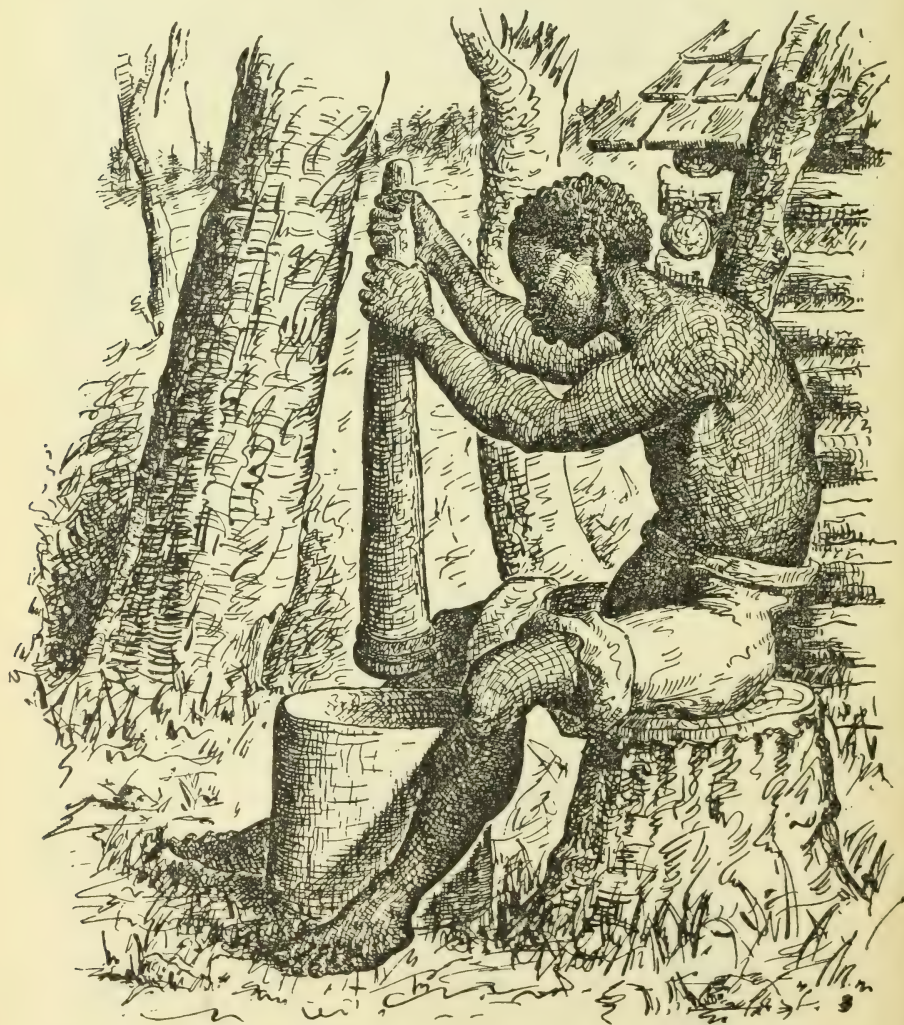


FIGURE 2. PRIMITIVE MORTAR FOR GRINDING OR POUNDING GRAIN.



In figure two is shown another form of the hollow stone or mortar for reducing grain to meal or flour. In the earlier days the bottom of the pestle or pounder was covered with ridges and hence the grain was in part pounded and in part grated to powder. The operator gave the handle a rotary motion which greatly aided in the success of the work.

Another method of making flour, which the earlier races employed, is shown in figure three. It consists of rubbing the grain between two stones. The under one of these is hollowed out to receive the grain. The upper stone is held by the hands of the operator, who, by long continued rubbing, reduces the corn to meal.



FIGURE 3. PRIMITIVE METHOD OF FLOUR MAKING.

For the more successful operation of such a set of stones as is shown in figure three the upper stone must be ridged as was the pestle in the mortar shown in figure two. From the experience gained with these appliances men were led to invent the first form of all later stones for milling purposes. One stone was made to revolve above another and the grain was reduced to flour between them. One of the many forms of the primitive hand mill or quern is shown in figure four. It is the form which was in use in ancient Palestine.

The possession of a mill, such as is shown in figure four, was very important to every householder of antiquity. Moses forbade the people to place their mills in pawn, for that, he says, "is the same thing as to take a man's life to pledge." This form of flour mill or quern is still in use in many parts of the world, especially in savage and barbarous nations. It is also in use in places but sparsely settled, and in which the roads are poor and the facility of transportation limited. Thus the quern is still in use in the mountain regions



FIGURE 4. ANCIENT JEWISH QUERN, OR HAND FLOUR MILL.

of Scotland, and also among the small islands about that country. Figure five shows a quern from North Yell, in that region. Similar ones are in use in that section at this time.

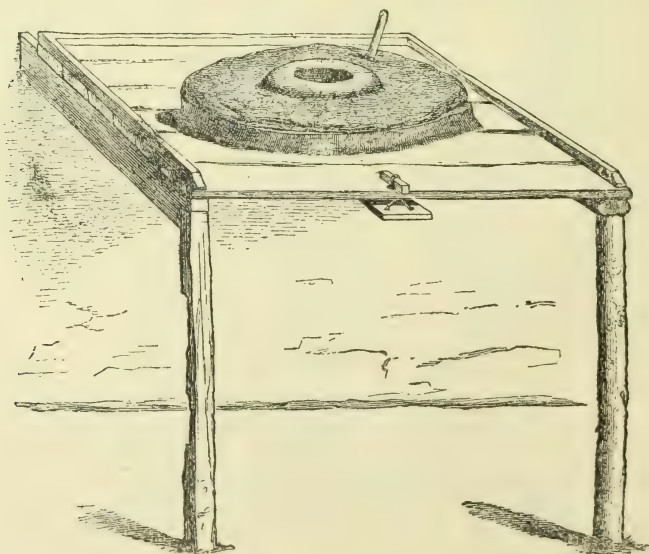


FIGURE 5. QUERN FROM NORTH YELL.

The under surface of the lower stone receives for these mills little or no fashioning and the level is obtained by bedding it in clay. The quern, where still in use, usually rests upon a bench or table, such as is shown in the figure. This table stands in the living room or porch of the house. In the centre of the under stone is a hole through which passes a piece of wood, used as a spindle, to support the upper stone, and on which that stone is made to revolve. By a simple device, this spindle can readily be raised or lowered, and thus the quern made to grind fine or coarse. Figure six shows a cross section of such a quern as is illustrated in figure five.

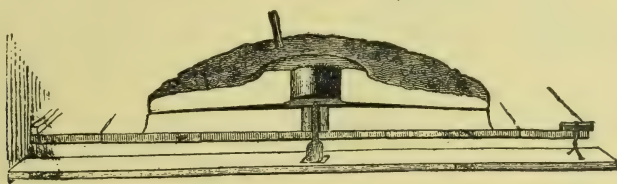
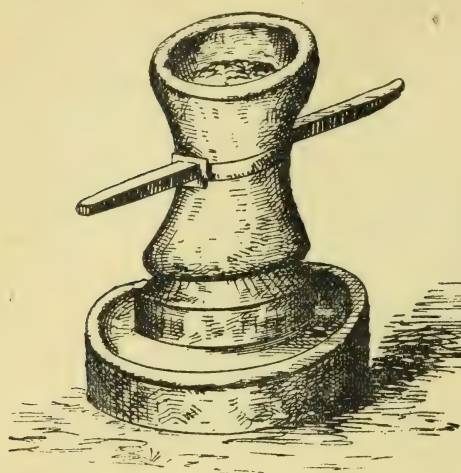


FIGURE 6. SECTION OF QUERN FROM NORTH YELL.

The upper stone in these primitive mills is always the better finished of the two. The grain is fed into the mill through a hole in the upper stone. That stone also has a handle of wood by which the operator causes it to revolve. Sometimes the quern is made of larger size, and it then receives two handles, as is shown in the old Jewish quern of figure four. In ancient times the work of grinding flour was mainly the task of women. The Bible contains many references to these mills and to the women who operate them. The early Greek writers also make frequent mention of them. Thus Homer, in the *Odyssey*, tells us in book XX, lines 127 to 129, about the flour making in the household of Ulysses in Ithaca. The work was there done by women, as in Palestine. Thus we read, "there were twelve who toiled in making flour of barley and of wheat, the strength of men." The members of this household could not have exceeded two hundred and probably did not number many over one hundred. These women, we read often, had to toil at their task late into the night. It required then the labor of from one-tenth to one-sixteenth of the community to prepare the flour for the same. This stands in sharp contrast with the present methods in the great mills of Minnesota whereby the toil of one workman suffices to do the mechanical work of grinding the flour of over one thousand persons. The modern workman then in flour making performs the labor which in the past required the services of from sixty to one hundred. Here we have a measure of the improvement in labor saving devices in flour making. Thousands of inventions stand between the primitive quern, illustrated above, and the modern mill in which is prepared the food of to-day. A very few of them will be passed in review in this connection.



The first step forward was one shown in figure seven. This



is a quern from ancient Pompeii. It consists of an enlargement of the mill which allowed the application of power. To be sure, the mill shown in figure seven was driven by human power, the labor of slaves. It could be driven by a animal power. Such mills as this were propelled by a number of bondsmen around whose necks were usually placed a circular piece of wood so that they could not put their hands to their mouths or eat of the meal.

FIGURE 7. POMPEIAN FLOUR MILL, A. D. 79. The water mill appears to have been introduced in the time of Julius Cæsar. Mention of water mills in France, Italy, and elsewhere became common after the fifth century. At first these water mills were like the mills operated by hand only nature, and not man, supplied the motive power. The character of the first water mills may be gathered from figures eight and nine. They give the external appearance and internal construction of a so-called Norse mill from the Isle of Shetland.

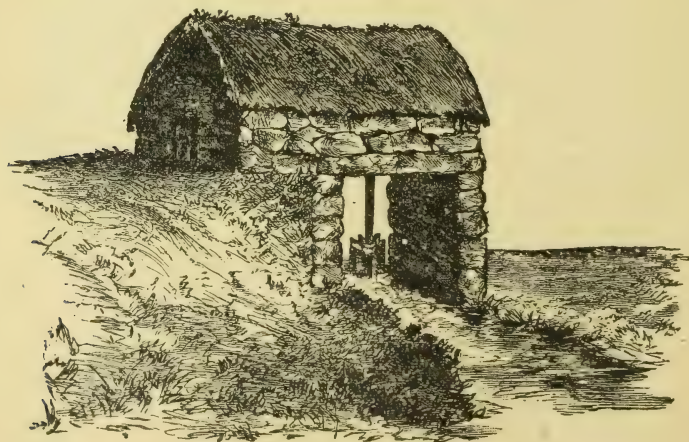


FIGURE 8. SO-CALLED NORSE MILL OF SHETLAND.

The water wheel in these mills is seen to be of the crudest pattern, and the stones but a variation of the simplest of hand querns. It is a quern, only driven by water. The grain is fed

from a hopper suspended from the roof by straw ropes. Such mills were first built by individuals for their own use or they were constructed by townships or villages for the common good. Each man was his own miller. He brought his grain to the mill and when he had completed his task of grinding he

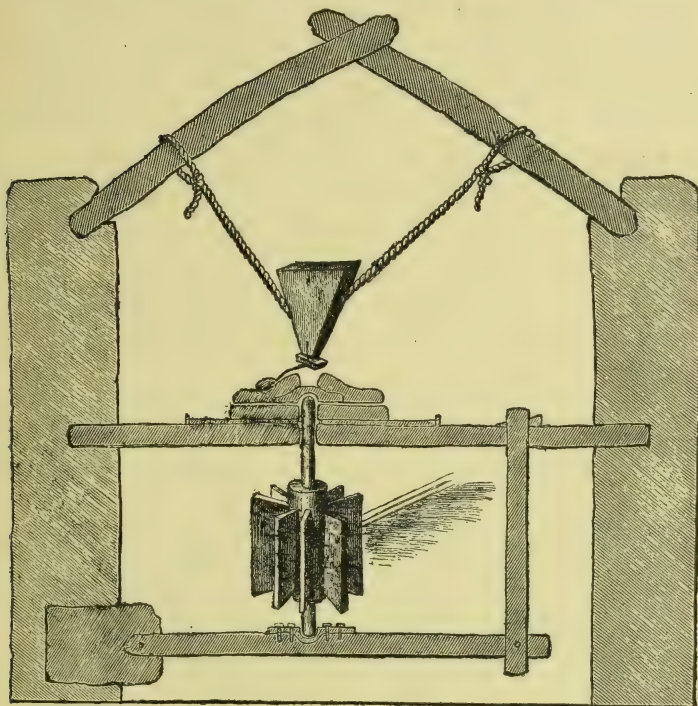


FIGURE 9. ROUGH DIAGRAMATIC SECTION OF SHETLAND NORSE MILL.

returned home. In this simple mill, however, we find all the mechanical principles which were in use in any of the flouring mills of a century ago. There is the same rule for raising or lowering the stone to grind coarse or fine. Modern inventions are very numerous and ingenious, but none show any greater application of intelligence to the work of flour making than was put forth by the men who first shaped the quern and harnessed the river to do the work of man.

The method of applying a sieve, in the form of an extended bag, to be shaken by machinery, was first introduced in power mills in the beginning of the sixteenth century. As the earlier quern contained all the mechanical principles of the most modern mill stones, so those first sieves contained the germs of all subsequent bolting apparatus and all appliances for purifying and separating the various grades of flour.



## FLOUR MAKING MACHINERY IN THE UNITED STATES.

All the foregoing described devices for flour making have been in use in the United States at various times and places. The settlers at Plymouth, Mass., had no mills during the first twelve or more years of their residence in the new world. For flour making they made use of mortars similar to the one shown in figure two. That same apparatus has been employed in many other sections of the country before the introduction of the power mill. The following is a description of the form of those mortars in use in early Pennsylvania. It is from the history of Crawford county, in that state, (page 254:)

“‘The Hominy Block’, an article in common use among the pioneers, consisted of a block of wood with a hole dug or burned into it a foot deep. In this the corn was pulverized with a pestle. Sometimes this block was inside the cabin where it served as a seat for the bashful backwoodsman while “sparking” his girl. Sometimes a convenient stump, in front of the cabin door, was prepared for and made the best of hominy blocks.”

When the hominy block, above described, was a stump out of doors, a young sapling was often bent over and the pestle attached thereto. Thus, the elasticity of the young tree was made to assist in raising the heavy pestle which in such a case was employed. The use of these “hominy blocks” in no place continued very long in the new world. They were uniformly displaced in a few years by the introduction of the power mill which was erected so soon as there were sufficient inhabitants in a given section to pay for the maintenance of such an expensive improvement.

The early mills, in the great majority of the states, were at first driven by horse power. When they were the miller was permitted to take a larger toll than was allowed to the owner of a mill driven by wind or water. The early mills, in most of the thirteen colonies, were mere corn crackers. They did not bolt the meal prepared by them. The general introduction of bolting apparatus into the mills of the country did not take place before about the year 1800. To be sure, some mills in New York and Pennsylvania had employed this apparatus for over a century before that time. In early New England some families secured bolting facilities of their own. They established “bolting mills” apart from the mills for grinding. With their apparatus they bolted the flour for their own use and often performed the same service for their neighbors. The early bolting or sifting apparatus in use among the families of New England was very simple. It consisted of a long strip of sleazey cloth over which the ground meal was caused to pass by the hands of the operator. Such cloth, under the name of strainer cloth, was common in the early stocks of Boston merchandise.



Improved bolting apparatus was introduced into New York and Pennsylvania earlier than was the case of the other colonies. They more than the others were engaged in exporting wheat and flour to the other colonies and to the West Indies. In preparing flour for that export trade, the millers of New York city and Philadelphia established good bolting facilities even earlier than 1698.

#### FLOUR MILLING IN MINNESOTA.

The first mill to be erected within the confines of the present state of Minnesota was constructed for the use of the United States garrison at Fort Snelling? The saw-mill part of this establishment was constructed in 1821. It stood upon the west side of the falls of St. Anthony and upon the site afterwards occupied by the Holmes and Sidle mills in Minneapolis. In 1823, this old government mill was fitted up for grinding flour.

OLD GOVERNMENT MILLS  
BUILT 1823-4.

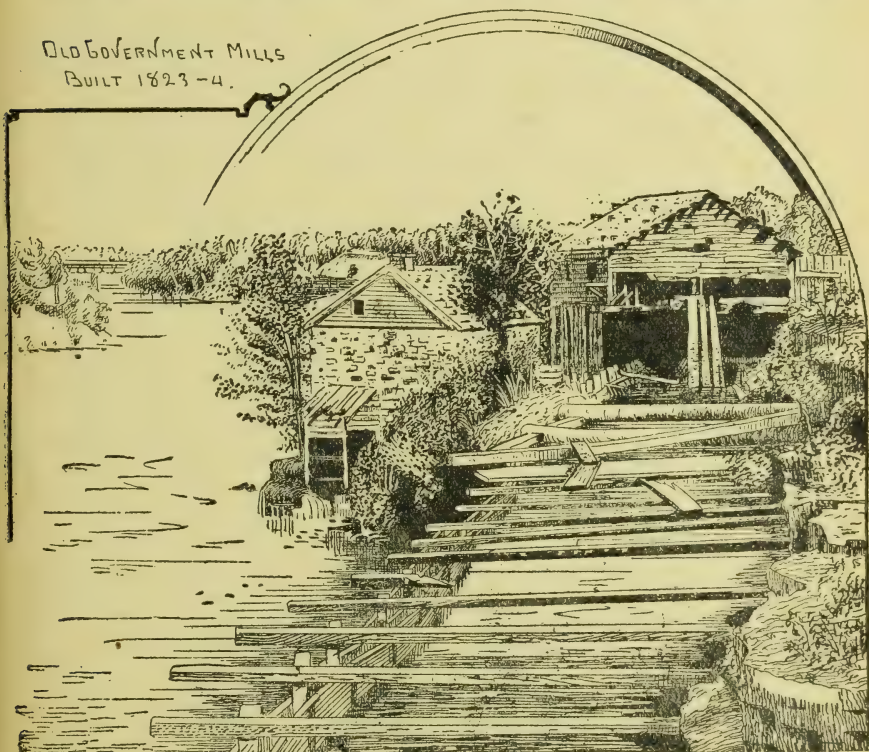


FIGURE 10. OLD GOVERNMENT MILL AT MINNEAPOLIS, MINN.

In the spring of that year the commandant of the fort, Colonel Snelling, advised the United States Quartermaster General that the troops of the garrison would raise a large quantity of wheat during that season. The Assistant Commissary of Subsistence, at St. Louis, was therefore instructed to forward, by

boat, to St. Peter, some sickels with which to reap the grain and a pair of stones with which to grind the same. These stones reached the garrison in the autumn of that year at a cost of \$250.11. This, with the expense for 337 pounds of plaster of paris for balancing and weighting the upper stone, (\$20.22) included all the cost of this first Minnesota mill to the government. The labor of erecting the mill and placing the stones in place was performed by the garrison and without additional outlay. The price of the flour (unbolted) furnished by this mill to the garrison was fixed, in January, 1824, at \$3.33 a barrel. A picture of this first Minnesota mill is shown in figure ten.

The second mill for grinding corn or grain in Minnesota was built in 1843 by Samuel Bowles, on Bowles' creek, in the county of Washington. This was a small mill having one pair of 18-inch stones, but at first without bolting apparatus. The custom of the farmers in the vicinity, at that early time, was to carry their grists of wheat to mill where it was crushed, afterward, at home, it was sifted, and report says, made admirable bread. In 1846 Mr. Bowles introduced the first bolting cloth, which was also the first in use north of Prairie du Chien, Wis. The first private mill at Minneapolis was built for Mr. Steele in 1847 by a Mr. Godfrey who came from Maine for that purpose. This was like the two others referred to, a small affair. With the others, it must be mentioned, as the beginning of the great and growing industry of milling in the State.

For many years the best flour used in the State was made from winter wheat and was brought up the river from St. Louis. This importation of winter wheat flour continued, to some extent, until the introduction of the new milling process in the seventies. The state did not raise enough wheat to supply all its demands for several years. It did not export grain to any extent until the year 1858. From that time the development of wheat raising became very marked. It was stimulated by the high prices of this article of commerce which prevailed during and for some time after the close of the southern war in the sixties. The flour mills in the State, in the year 1860, were eighty-one in number. In 1870 this number had increased to 216. With the introduction of the new process of milling, in the early seventies, many new and large mills were erected, and in the year 1879 these mills exported their first flour to Europe.

#### AMERICAN PROGRESS IN MILLING MACHINERY.

The states of Pennsylvania and New York were engaged in the exportation of wheat flour at an early date. Hence, in these states, the business of flour making soon assumed an importance. Their millers introduced the bolting cloth into their mills and led in adopting all the improvements in milling machinery which had been devised in the old world. To keep pace with the mother country seems to have been the ambition

of the mill owners for over a century. Then came the era of individual invention. In this invention the flour making industry led all others in America. *The first patent granted to a citizen of the new world for an invention or discovery was for a device connected with this flour making industry. It was to a citizen of Pennsylvania. This first inventor in the new world was a woman, Mrs. Sybilla Masters, of the city of Philadelphia. The patent was, however, granted to her husband under the laws and usages of the period, which gave the man control of the financial and business affairs of his wife. This first invention in the milling business of the new world, the first device which secured an American patent, was protected by the English patent No. 401, issued November 25, 1715, in the following quaint language:*

"to Thomas Masters, of Pensilvania, his Exec'rs, Adm'rs, and Assignes, of the sole Use and Benefit of A New Invencon found out by Sybilla, his wife, for Cleaning and Curing the Indian Corn Growing in the several Colonies in America, within England, Wales, and Town of Berwick-upon-Tweed, and the Colonies in America."

#### Cleaning and Curing Indian Corn.

LETTERS PATENT to Thomas Masters, of Pensilvania, Planter, his Exec'rs, Adm'rs, and Assignes, of the sole Use and Benefit of "A New Invencon found out by Sybilla his wife, for Cleaning and Curing the Indian Corn Growing in the several Colonies in America," within England, Wales, and Town of Berwick-upon-Tweed, and the Colonies in America. Teste R. 21<sup>o</sup> Westm, 25<sup>o</sup> die Nov<sup>o</sup>, anno R<sup>o</sup> 1<sup>o</sup>.  
p. bre, &c.

Dated 25th November 1715.

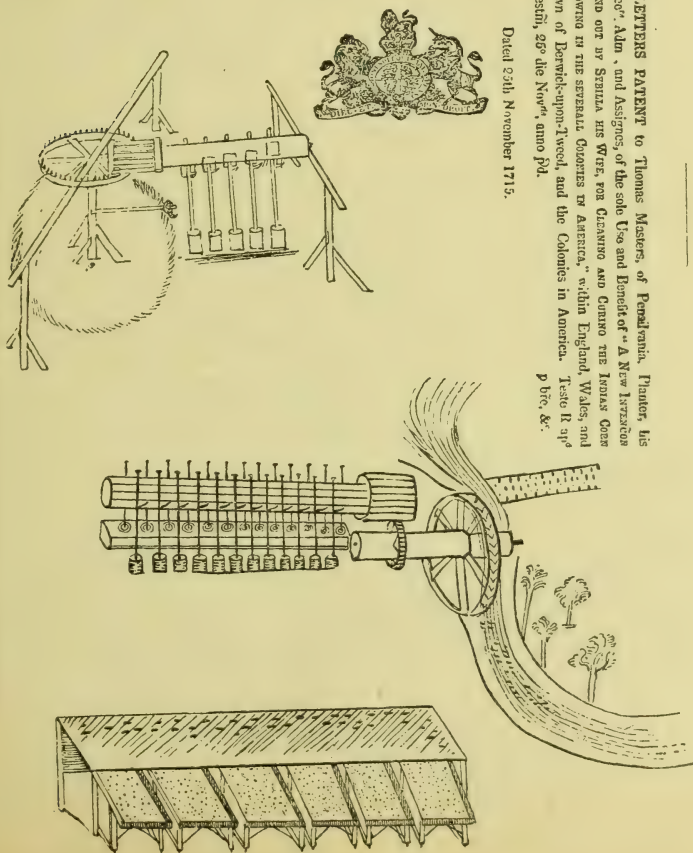


FIGURE 11. THE FIRST MILLING PATENT IN AMERICA.



This invention of Mrs. Masters consisted of (see figure 11,) two series of stamps in mortars, to be driven by horse or water power, acting through wooden cog-wheels on a long cylinder, the latter having projections to trip the stamps or mallets. There were also included a number of inclined trays. At the foot of the rude drawing of the machine there is the following, in old English script, apparently an additional claim or after-thought. The language is in places somewhat obscure.

"Philadelphia, the 2d, 6th, Mo., called August, 1716.

Pursuant to his Majesty's Grant for the Using, Trying and Preparing the Indian corn fit for transportation and which was never before done, these are examples of part of the Engines I [obscure] on my protection, with the witness my hand and seal.

SIBILLA MASTERS."

It will be noted that the essential portion of this device of Mrs. Masters was a series of mortars driven by mechanical power. Possibly the whole invention was suggested as an improvement upon the "hominy blocks" already described as being common in some parts of early Pennsylvania. Be that as it may the future progress in American milling was not to follow the methods devised by Mrs. Masters. That invention came to naught. Mrs. Masters called her preparation of corn "Tuscarora Rice." It was something like the modern hominy. She strongly recommended it as a food and particularly for the relief and recovery of consumptive and sickly persons. After he had secured his patent, Mr. Masters, who was a wealthy man for the times, purchased the historic "Governor's Mill," erected for Wm. Penn in the beginning of his colony. In that mill he set up apparatus suitable for the manufacture of "Tuscarora Rice," with the results already mentioned. The incident is mentioned merely to show how the methods of preparing food from grain was the first subject to attract the attention of American inventors and to illustrate how the milling industry has, from the beginning, been an important factor in the mechanical progress of the country.

A few patents, for a limited territory, was granted by the early colonies before the revolutionary war or the adoption of the Federal Constitution. Thus Connecticut, in 1774, granted a patent for 40 years to John Shipman for an improved grist-mill in Saybrook. This gave the patentee the exclusive right of grinding grain for a distance of ten miles from his establishment.

The United States patent laws went into effect in the year 1790. The third patent issued under those laws was granted to Oliver Evans, of Philadelphia, for improved methods of manufacturing meal and flour. This patent was dated Dec. 18, 1790. To the same individual were subsequently granted a large number of patents for improved milling machinery.

#### THE MILLING INVENTIONS OF OLIVER EVANS.

Mr. Evans, who was born in 1756 and died in 1819, by his devices, reduced the human labor required in milling to less than one-half its former proportions. In his lifetime he

invented and introduced five important pieces of mill apparatus—the elevator, the conveyor, the drill, the descender, and the hopper-boy. The essential character of these inventions was to substitute mechanical power for human muscle in performing the labor in and about a flour mill. For centuries after the introduction of millstones, driven by water power, all the grain had to be taken to the upper floor of the mill by human labor. Men loaded the wheat into bags and painfully carried it up to the receiving bins in the loft. Then, when the grain had been ground and it was desired to bolt the same, the meal, as it came from the stones, was again loaded into sacks and taken above to undergo its second process of manufacture. The devices of Mr. Evans substituted machinery for all this manual labor in handling grain and meal in flour mills. In speaking of these devices their inventor says:

“By means of these machines may be performed every necessary movement of the grain and meal from one part of the mill to another, through all the various operations from the time the grain is emptied from the wagoner’s bag, or from the measure on board ship, until it be completely manufactured into flour either superfine or of other qualities, and separated, ready for packing into barrels, for sale or exportation. All which is performed by the force of water, without the aid of manual labor, except to set different machines in motion, etc. This lessens the labor and expense of attendance in flour mills *fully one-half.*”

The most important and useful of the inventions of Evans were the elevator and conveyor. The former is an endless band, with cups attached to the outside, which, acting like scoops, raise the grain, meal, etc., and discharge the same on reaching the top. The conveyor, for grain, consisted of two helicoidal surfaces on a revolving shaft, and for meal, of a shaft with a series of small wooden blades set spirally and at an angle. These were called “flights.” In both cases the contrivance was enclosed in a box, and moved the material by the principle of the screw or plow. These two devices of Evans are now in universal use in flour mills. They are also the essential machinery employed in the great elevators, as we call our modern buildings for storing and handling grain. The three other inventions of Evans are now obsolete. The hopper-boy was a device for spreading the flour as it came from the stones and before it passed to the bolting reels. This spreading was done for the purpose of aiding the flour to cool before bolting. The drill and descender were both machines for moving grain and meal horizontally. They have both become obsolete with the hopper-boy, the conveyor, with its improvements, having entirely displaced them. Besides, the results of his inventions already stated, Mr. Evans enumerates the following benefits:

“A better preparation of the meal for bolting, for packing, and for preserving, in much less time than usual; the work of cleaning the grain, elevating and mixing various parts, to be



again treated, is effected in one operation; there is considerable saving in meal; there is economy in space; the work is performed more rapidly, the elevating done with less power, while preventing sudden variations of speed in the stones; and finally, there is a great saving in the cost attendance, one operative turning out twenty barrels of flour instead of ten as by the old method, a forty barrel mill requiring in all only two men instead of four men and a boy. The machines were durable and economical, as their motion was generally slow."

Prior to Evans' time the only saving in labor effected in flour milling was that made by the substitution of mechanical power for driving the stones used in grinding. With Evans' devices began the application of machinery to all the work and processes within the mill. Since his day countless machines have been invented for lessening the amount of human labor in the manufacture of flour. The packing of flour into bags or barrels is now done by machinery as are many of the other operations and processes once performed by hand.

#### THE "OLD" PROCESS OF MILLING.

In the early part of this century the millers made their flour by what is now known as the "old" process, or by "low grinding." The essential fact about that process to be noted is that by it the wheat was reduced to flour by one operation of the stones. Subsequent to that operation of grinding the resultant material was bolted and separated into flour, bran, etc. So long as this process was in use among millers the attention of inventors and workmen was directed to securing the best possible "dress" and "grinding surface" for the millstone, the right balancing of the upper or running stone, and the best adjustment of its speed while grinding. In all these subjects much progress was realized in the early part of this century.

In securing these desirable ends a more skillful class of mill-wrights were educated and better designs and better workmanship became apparent in all parts of the mill and in the construction and adjustment of all the machinery thereof.

The adjustment and management of the stones was thus greatly improved from the usages of Evans' time. In the same way progress was secured in the methods of bolting the meal, and thus a change for the better was made in the quality of

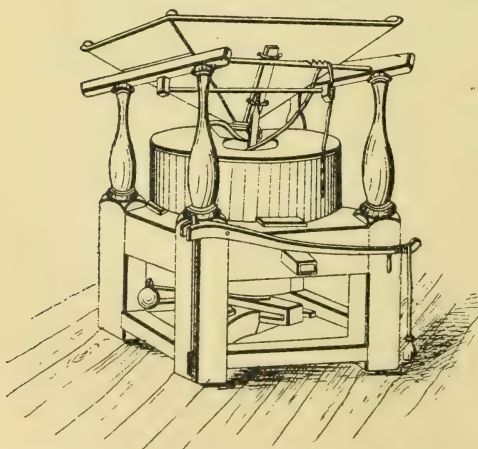


FIGURE 12. GRIST-MILL OF THE UNITED STATES ABOUT 1830.



flour manufactured in America. Nicely woven silk bolting cloth was substituted for the poorer woolen and cotton in use at an earlier period. This permitted of a more complete bolting and enabled the mill to produce a larger amount of good flour from a given quantity of grain. As the millers improved the machinery for grinding and bolting flour, so they secured better devices for cleaning and separating the wheat from cockle and other foreign substances. This aided in turning off a product of a better quality. The external appearance of the mill in general use in the United States for grinding wheat is shown, for the year 1830, in figure 12.

Sometimes, to secure a larger amount of low grade flour, a second or auxilliary pair of stones was made use of. When

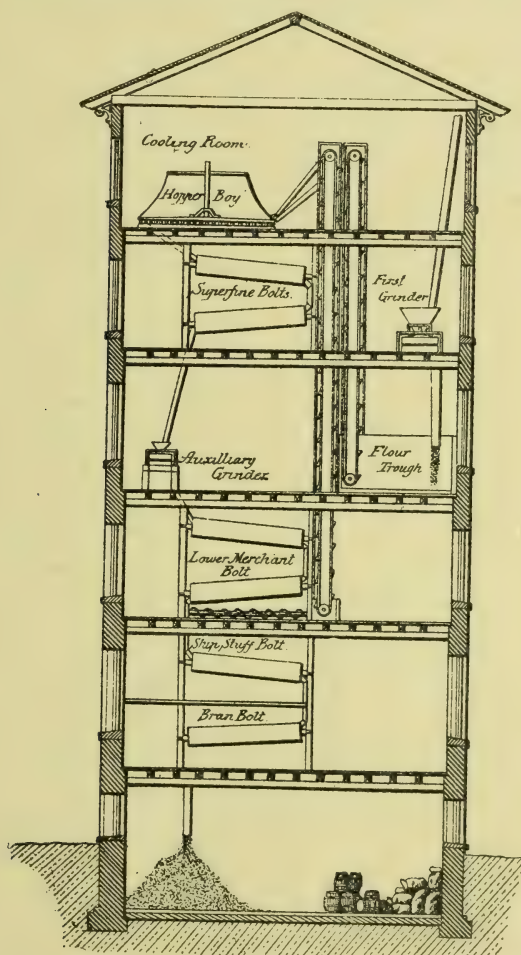


FIGURE 13. INTERIOR OF AMERICAN FLOUR MILL OF 1850.

such was the case, the general appearance of the mill and the passage of the grain through the different pieces of apparatus would be approximately that shown in figure 13.

The method of making flour above described gave place, in Minnesota, between the years 1870 and 1880, to what is usually called the "new" process of milling, or the manufacture of flour by "medium high grinding."

#### THE "NEW" PROCESS.

Briefly outlined the "new" process consists of reducing the grain to flour by two or more distinct grindings. The first grinding, or passage of wheat through the stones, is called "granulating." It consists of reducing it to small particles or granules. The resulting "chop," as it is called, is separated into its component parts, flour and middlings and bran, by means of bolts technically called "scalping reels." The flour obtained by this first treatment is of an inferior grade. The middlings, containing the more valuable portions of the wheat, are then purified, graded and re-ground into flour on separate stones. The flour thus produced was early called, by the designation still borne by it, "patent" or "high grade" flour by the "new" process. This method of flour making was first adopted in the United States by the millers of Minnesota. The history of its introduction, condensed from the Northwestern Miller, for January 10, 1890, is substantially as follows:

Not far from the year 1860 a French gentleman, by the name of N. La Croix, came from Canada to the village of Faribault to construct and operate a small mill for the founder of that town, Mr. Alex. Faribault. Mr. La Croix was an educated mill-wright, and a gentleman possessed of a wide knowledge in technical science. He had been educated in the technical schools of his native country in the city of Paris. He did not understand the English language, and this fact kept him from the worldly advancement which his genius and labors so richly deserved.

The mill erected by Mr. La Croix for Mr. Faribault was a small one with only two run of stones. This mill was constructed by Mr. La Croix on the principle of the "high grinding," and was the first one of its kind in the United States. The method of milling, then made use of at Faribault, was known in the old country, but nowhere there appreciated at its true worth. The two run of stones in the little mill were dressed and speeded for the purpose of making middlings. The sifted middlings were re-ground by themselves, and the flour made therefrom sold separate from the other products of the mill. It brought, at the mill, 50 cents a sack, of 50 pounds, more than any other flour made in the town. In 1866 Mr. La Croix built a mill for himself in the same town. This was owned jointly, by himself, his brother, E. N., and his son, Joseph La Croix. Some changes and improvements were introduced into this mill, as compared with the one erected some years previously for Mr. Faribault. A light current of air was made to

pass through and under the seive and thus cause the less pure middlings to fall farthest off until they were sufficiently poor to "tail off." This change proved a great improvement, and it demonstrated, for the satisfaction of the La Croixs, that from the spring wheat of Minnesota could be manufactured the best of all possible flours.

Mr. La Croix could not, however, make his neighboring millers believe in this possibility of the Minnesota wheat, or the value of his new devices. They did not like the looks or working of his system of bolts and reels for purifying the middlings. They called him, in derision, the "shaking miller," from the number of his shaking sieves or reels in his mill. Mr. La Croix, not content with what he at first had achieved in his mill, began a more systematic study of the subject and devised a number of other improvements which he introduced into his mill. Unfortunately for its owner and the inventor of so many valuable milling devices, his mill was swept away in a freshet, and he was unable to rebuild the same. He went to Minneapolis to work in one of the small mills which, at that time, existed in that city. He found employment in the service of Mr. Christian. While he had not been able to impress his ideas upon his neighboring millers at Faribault, Mr. La Croix did succeed in inducing Mr. Christian to make trial of the same.

A purifier was built under Mr. La Croix's direction. To make such a machine then, with none of the modern conveniences therefor, was a difficult operation. It was done, however, and from the start proved a success. The flour produced by the device sold readily for two dollars a barrel more than any other flour manufactured in Minneapolis.

This made men believe in Mr. La Croix and his system of milling. In a few years that system was adopted in all the leading mills of Minnesota. In fact, its early adoption by a few, soon made them leading millers, not only in their State, but in the world. Those millers achieved a reputation which caused their flour to become a household word wherever good flour and desirable bread was consumed. The reputation made in those early years is still worth large sums of money to some of the flour-makers of Minnesota. Minneapolis soon became the largest milling centre of the world. The invention thus largely assisted in making Minneapolis into a city. It at least hastened, by many years, its growth and commercial importance. The growth of the mills, created by the magic of this invention, diverted the wheat of a great section to the village by the Falls of St. Anthony, and in a few years, by its accompanying stimulus to other trade and industries, created a flourishing city. Here is one effect of the introduction of the new process of milling into Minnesota.

The idea put into practice by the millers of Minneapolis, under the direction of the inventive skill and high technical knowledge of the La Croixs, rapidly spread over the country and attracted the attention of the world. Before that time



much American wheat had been shipped to Europe but scarcely any American flour. The only exception being some select brands of flour made from winter wheat. These were brands of flour which stood exceptionally high in popular esteem. After the introduction of the new process the Northwest began to export flour to Europe. The first of such exportation took place from Minneapolis in the year 1879.

This early success set millers and experts to inventing and bringing into use other improved devices for changing grain into flour. Improvement followed improvement with extraordinary rapidity, and the milling business has, in the years since 1870, been carried by ingenious Americans to the highest perfection and by them the knowledge of these improvements has been extended to all parts of the world. It is not within the scope of this investigation to describe or even to name these inventions which have been devised and introduced since Mr. La Croix began to make flour by the "new" or "high grinding" process at Faribault, shortly after the year 1860. The mere mention of those devices by name would, with the names of their inventors, occupy many pages. The principle of the "new" process was the gradual reduction of the grain to flour by a series of grindings instead of by one, as was the practice in the earlier method of flour making. The extension of this principle of "high" or successive grindings, led to the system of milling now mostly used in Minnesota. It is known as

#### THE GRADUAL REDUCTION PROCESS.

It is also designated as the Hungarian method of flour making, since it was borrowed by the American millers from the practice of the millers of Hungary. This is likewise frequently designated as the "roller" process since, at the present time, the gradual reduction of grain to flour is accomplished usually by the aid of hardened rollers instead of the old fashioned millstones. In this process it was early discovered, by the millers of Hungary, that the first great essential of making good flour was to have the grain perfectly free from all impurities and foreign substances. This fact has led, in recent years, to the invention and introduction of numberless improvements in the devices for cleaning the wheat and preparing it for the roller or millstones. In the gradual reduction process of flour making, the grain, after being cleaned by this class of improved machines, passes through a number of hardened rollers. The grain passes through a number of sets of these rollers and each time is conveyed to an appropriate bolting apparatus before it is conducted to the next combination of rolls.

The passage of the wheat through these rolls and bolts is shown in figure 14. The arrangement in the figure is not meant to exhibit the location of the several pieces of apparatus in the mill, but only the movement of the grain and of its

several products. The actual location of rolls is at present usually upon the lower floor altogether. Each time the grain passes through one of the rollers mills its resultant product is carried by an elevator to an upper floor where it passes through its appropriate bolting apparatus. This modern process would be impracticable without the inventions of Oliver Evans to which attention was directed on other and earlier pages.

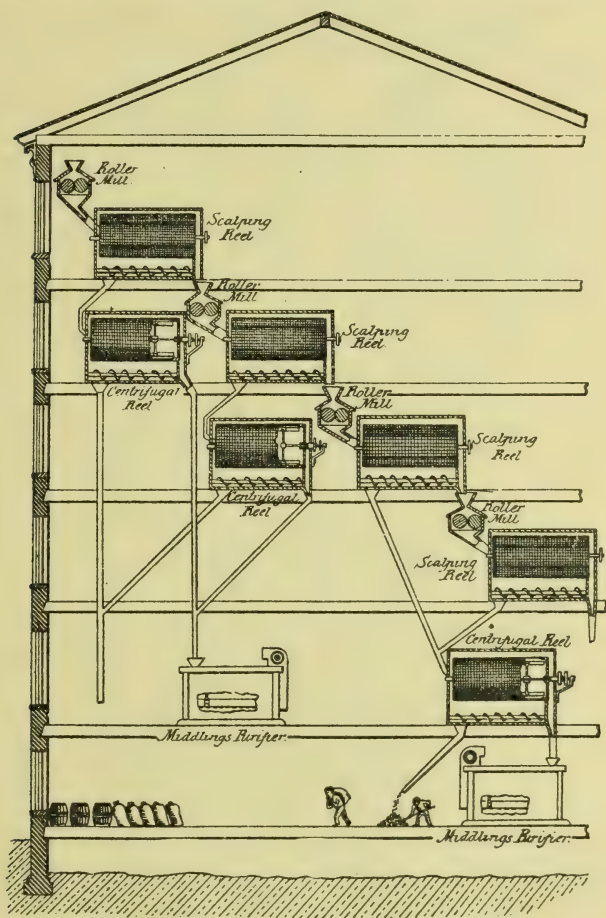


FIGURE 14. THE MOVEMENT OF GRAIN IN A MODERN MILL.

In the passage of years the form, construction and operation of these rollers have all been changed and improved as has all the other machinery in the mills. The roller had been introduced in a crude and imperfect form many years ago. Figure fifteen exhibits one of the earlier forms of the roller, a form in use as early as the year 1835.

In figure 16 this roller is shown somewhat improved, and as it was used in 1840.

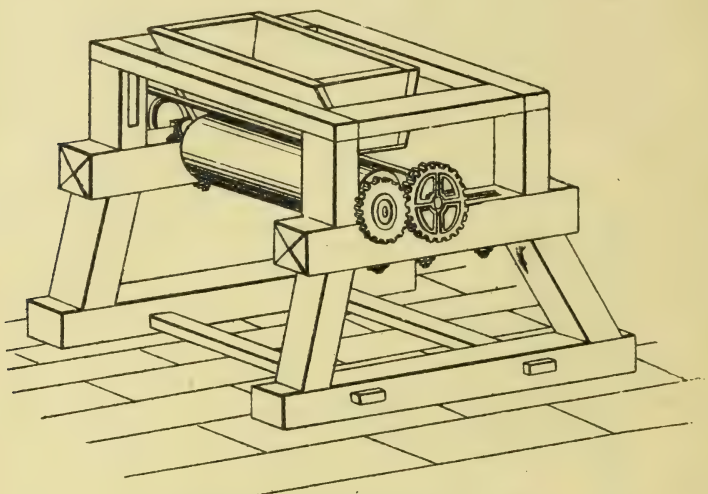


FIGURE 15. ROLLER MILL OF 1835.

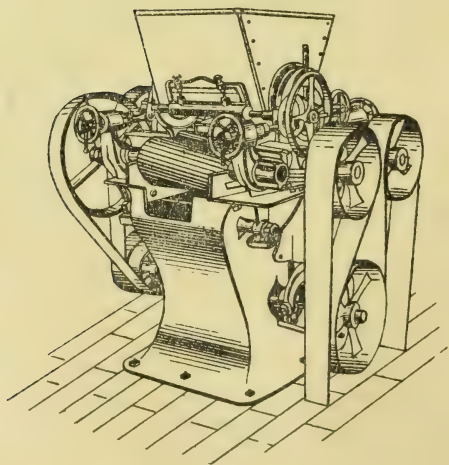


FIGURE 16. ROLLER MILL OF 1840.



In figure 17 is shown the appearance of one of the most recent as well as the best constructed of modern four roller mills. In figure 18 is presented a sectional drawing, giving the construction of a modern three roller mill

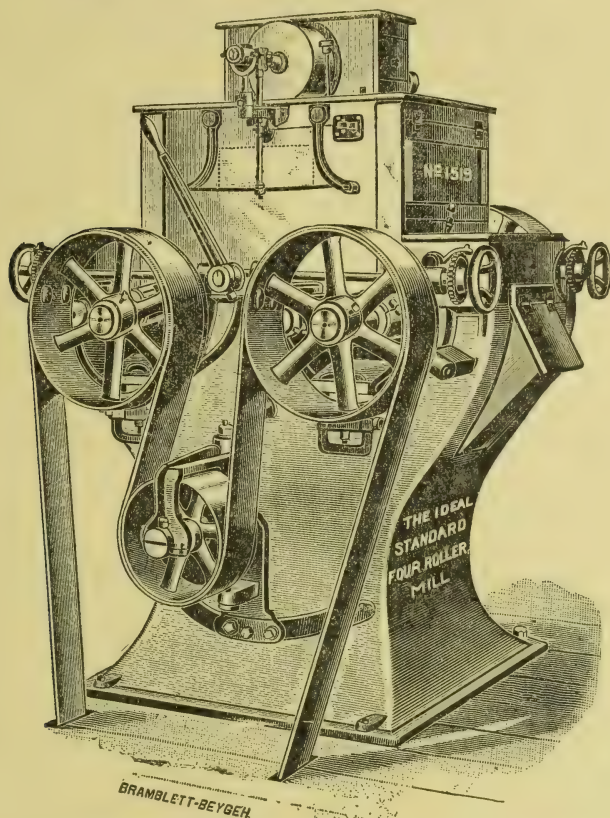


FIGURE 17. MODERN FOUR ROLLER FLOURING MILL.

The introduction of the "new" process, or "high" grinding system of flour making by Mr. La Croix, in the mills of Minnesota thirty years ago, has been attended with great consequences to the State and to the whole Northwest. The effect of that method of milling upon the prices of wheat and flour, and thus upon the prosperity and settlement of the Northwest, will be considered by itself in the next chapter. In this connection it should be noted that the work of Mr. La Croix opened a new field of invention in the milling business, of greater value to the world even than the inventions of Oliver Evans, in the early part of the century. Mr. Evans' devices tended alone to cheapen the cost of flour making by lessening the amount of human labor required in and about the mill.

The inventions following the introduction of the new process have not so much lessened manual labor in mills as they have improved the quality of our nation's food and cheapened it by causing a greater amount of good flour to be manufactured from a given amount of wheat. By this latter result the "new" process has indirectly done more for cheapening flour than was accomplished by the reduction of manual labor brought about by the devices. The "new" process has indirectly cheapened the cost of flour making in the United States, by leading to the construction of mammoth flouring establishments, in which is secured the greatest possible economy of grain and of labor. These large flour mills of the present must be placed in contrast with the earlier mills of the same class in the State, to measure the progress of the commonwealth in this industry.

In figure 10 was shown the appearance of the old government mill, the first constructed in the State for the manufacture of flour.

After the introduction of the new process the old mill was taken down and a new one erected, with the capacity of flour output which must have been about as great as that of all the mills in the State, at the time when Mr. La Croix came here to erect the mill for Mr. Faribault.

Other and larger mills have later been erected in Minneapolis and at other points in the State. The development of this branch of flour manufacture in the State gave an impetus to the establishment of other factories. These factories would, doubtless, sooner or later have been called into being, but their creation was hastened by several years, through the great success achieved by the Minnesota flour mills. The present capacity of the mills of Minneapolis, and those controlled from that point, is now over 40,000 barrels. This makes Minneapolis the greatest flour producing point in the world.

Other Minnesota towns are centres of a flourishing flour trade, all built upon the ability by means of the "new" and gradual reduction processes of flour-making, to produce from the hard wheat of the section the best flour in the world.

Duluth, in recent years, has erected one of the largest single mills in the State, the Imperial. As showing, in a graphic way, something of the character of the present flour mills in Minnesota, developed from the inventions of Mr. La Croix, there is

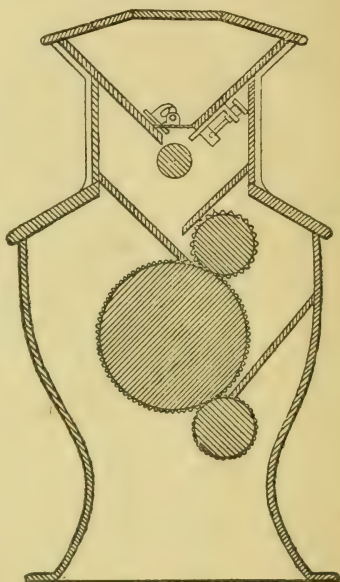


FIGURE 18. SECTIONAL DRAWING OF A MODERN THREE ROLLER FLOUR MILL.

presented a view of the Duluth Imperial mill, (Fig. 19,) Pillsbury "A" mill, in Minneapolis, (Fig. 20,) and two views (Figs. 21 and 22) of the great milling district in Minneapolis. The cuts, illustrating the primitive methods of flour-making, were taken mainly from the past and the present, by Arthur Mitchell, and from the growth of industrial art, by Hon. Benjamin Butterworth.

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## CHAPTER I.

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### THE "NEW" PROCESS OF FLOUR-MAKING AND THE PRICES OF WHEAT AND FLOUR.

Minnesota, as has been narrated in the introduction to this part of the report, led all the states of the American Union in the introduction of the new process of flour-making. The effect of the other inventions and devices for flour-making, referred to in the introduction, will be considered, in a general way, in the next chapter. In this, an effort will be made to learn, as fully as possible, the effects of the introduction of the new process, and of the long list of accompanying or resulting inventions which followed it.

One of the most important results, which came from this invention of Mr. La Croix, was the change which it effected in the relative prices of winter and spring wheat, and the flour made therefrom. From the sixteenth century, when good flour began to be manufactured at the mills, and the bolting process had been introduced, winter wheat had, at all times and in all places, commanded a higher price than spring or summer wheat. The latter name used to be applied more generally than the designation of spring.

The cause of this difference, which formerly existed between the prices of winter and summer or spring grain, was due to the varying qualities of the two kinds of wheat, and the old methods of milling. Spring wheat has a hard endosperm, rich in gluten, and a very brittle bran which is easily broken and pulverized. Winter wheat, on the contrary, has a tough skin which resists grinding much more effectively than the flouring portions which crumble very easily. Owing to the ease with which the bran of the spring wheat is pulverized it was never wholly separated by the old methods of milling. It passed through the bolts, and its presence in the flour always dis-



colored it, and gave to the bread made therefrom a darker appearance. In addition to this fact the presence of the fine particles of bran in the flour caused it to gather moisture much more readily than was the case with flour made from winter wheat. As a consequence, the spring wheat flour would not keep so long nor so well as the winter, especially in a moist or hot climate. These facts, about the flour made from spring wheat, reduced its price, as compared with that manufactured from good milling winter wheat. This difference in price can be traced through all the history of wheat and bolted flour since the introduction of the latter. No regular weekly or yearly quotations of wheat and flour prices can be given for the remote past, as can be done for the last few decades. Enough isolated cases can, however, be gathered from the earlier days to show the different esteem with which the two kinds of wheat have been long regarded. Examples and quotations will be given from the history of winter and spring wheat in the United States. As the business of bolting meal, in the preparation of fine flour, was only connected with the work of grist-mills in the sixteenth century, this differing value of the two varieties of wheat only dates from that time.

Rogers, in his history of agriculture and prices, gives countless prices for wheat during a period of six centuries. He, however, does not state the value of spring apart from winter grain. The introduction of bolting apparatus into mills, having taken place to some extent in the earlier years of the American settlement, this difference in price can here be traced from the beginning.

Much can be learned about the value of wheat in early New England from Weeden's "Economic and Social History" of that section of our common country. He tells us that at Hadley, Conn., about 1660, winter wheat sold for from three shillings and three pence to three shillings and six pence, while summer wheat only brought three shillings. At Springfield, Mass., the same authority informs us, for forty years the value of winter wheat was four shillings and that of summer three shillings and six pence. Weeden gives many isolated quotations of the value of both winter and summer wheat for the years from 1640 to the war of the revolution. The following are, however, all that have been found in his books where the two are given together, and hence can properly be used for comparison: In 1676 winter was worth five shillings and summer sold for four shillings. In 1680 the relative prices were five shillings and four shillings and six pence. In 1685 winter sold for five shillings and six pence and summer for four and six. In 1698 the price of winter was four shillings and that of summer was three shillings and six pence. The year 1727 was a time of scarcity and grain brought a high price. Winter sold at from six shillings and six pence to eight shillings, and summer for five shillings and six pence. The foregoing, from Weeden's history, shows the essential esteem in which these

two kinds of wheat were held in New England in its first centuries of settlement. The same condition of prices abounded in other early colonies.

By the laws of the Duke of York, made at the General Court of Assizes in New York in October, 1672, some previous laws, restricting the exportation of wheat and flour, were repealed. In the repealing act the values of summer and winter wheat at the time are given. It is said that winter wheat was then to be sold at four shillings and six pence, while summer was worth only four shillings. In the history of Kings county, New York, it is said that in that county, in the latter part of the seventeenth century, winter wheat varied in price from four to five shillings, and that summer wheat sold for three shillings and six pence.

The facts given above are evidence that for a long time the value of winter wheat was from ten to thirty per cent. in excess of that of summer wheat.

As showing the relative prices of the two kinds of wheat in this country in the last fifty years a series of tables have been prepared exhibiting the prices of different kinds of wheat and flour in the markets of Chicago, Ill., and Buffalo, N. Y. These are given at the close of this chapter. The market at Chicago is chosen in this connection because it, first of the western cities, attained a world wide prominence as a great centre for the sale of wheat. It is one in which the prices of all kinds of flour can be traced since 1860, and the prices of No. 2 red winter and No. 2 spring wheat can best be compared for that period. To be sure, the prices of the red winter wheat are not quoted by the Chicago reports for all the years, but enough are given to trace the drift in the public estimation of these two grades of wheat which are important in the purely speculative markets of the world. The record of the Buffalo market has been compiled, since it gives along with the prices of winter grain and flour, the prices of Minnesota wheat and flour for a longer period of years than any other. The Chicago quotations are taken from the annual reports of the Chicago Board of Trade and those of Buffalo from the files of the Buffalo Daily Courier.

The first reference to Minnesota wheat found in the Buffalo market reports was July 13, 1870, when it was said that some Minnesota No. 2 was quoted the same as Milwaukee Club. The first regular quotation of Minnesota grain in Buffalo appears July, 1871. In November, of that year, it begins to be stated every week. The first mention of Minnesota wheat was, however, made under the name of Duluth. This name Duluth continues until the end of the year 1875 when it is displaced by the name Minnesota. A number of other minor changes in the names of grades are subsequently made at Buffalo. Not all of these changes of names are reproduced in the tables. The facts found in the reports are reproduced and the names of grades kept so as best to exhibit the value of Minnesota grown wheat

in comparison with other grades of that cereal. The Buffalo wheat reports are found in Exhibit A and Table II. Wheat, in the earlier years, was sold in Buffalo on sample exclusively, and not, as now, on grade. In giving a report of these earlier sales the wheat is referred to by the daily papers under such a multitude of names as to make it quite difficult to present the facts in a tabular form. Hence, the way of presenting the earlier quotations found in the given exhibit.

The Chicago wheat reports, given in Table I, only include quotations for red winter and spring No. 2. The latter is the great speculative grade of Chicago and the other the most important speculative grade of western winter wheat. The prices of the red winter wheat are not given in the reports of the Chicago Board of Trade for all the years since 1860. This fact explains the breaks or omissions of some years from table I. For the Chicago markets the quotations given present the weekly variations in prices for the first week in each month; for the Buffalo markets the prices on the dates given.

The prices of the "new" process or spring patent flour of Minnesota was first regularly given in the annual reports of the Chicago Board of Trade in the year 1876. The report for 1875 makes mention, in a foot note, of the fact that in that year the Minnesota patents had averaged two dollars higher than that of the best grade of spring wheat flour given. This "new" process flour was first regularly quoted in the Buffalo Courier May 10, 1873, and thereafter mention thereof is continuously found in that paper's report of the Buffalo flour market. The year 1873 marks, then, the introduction of the Minnesota patent, or "new" process flour into the markets of the states outside of the one in which it was first manufactured. The appearance of this grade of flour, in 1875, in the annual reports of the Chicago Board of Trade, shows that before that time it had gained a recognition of its value from the great world dealers in this staple food product of America.

Turning now to the market reports of wheat at Chicago and Buffalo the effect of the Minnesota improvements in milling may be noted in the changed relative values of different grades of wheat. Table I shows the excess of the value of red winter over spring for a series of years at Chicago. The amount of that excess varied exceedingly in the years before the introduction of the new process of milling. The highest limit of this difference was shown in December, 1872, when it was from forty to fifty cents. The extreme difference to be noted, then, was doubtless due to some special defect in the spring wheat raised the preceding season. Similar conditions of the wheat marketed in the several years may and doubtless does explain all the fluctuations in the relative prices of the two grains between 1860 and 1872. The relative prices of the two grains, in 1879 and 1880, show but a slight change from what existed in the values of these two grades in 1860 and 1861. The old superiority of red winter over the same grade of spring had



not vanished at Chicago, although the new process of flour-making had been in use in Minneapolis over five years. At most, the difference in the selling prices of these two kinds of wheat, was only about three cents a bushel less in 1880 than in 1860 and 1861. The milling inventions introduced in Minnesota did not at first then change, or radically affect the selling prices or value of the great body of wheat raised in the American Union. At least that seems to be the only conclusion which can be deduced from the wheat quotations at Chicago. Exhibit A and table II show the wheat prices at Buffalo, N. Y. They present the fact that from the first quotation of No. 2 Chicago spring, in that market, it had sold for from 15 to 20 cents a bushel less than red or amber. Table II traces that difference down to the close of the year 1875. The full reports of the Buffalo markets enable us to trace this a little later. The former difference, of 15 to 20 cents, between the selling price of red and amber winter and spring wheat, continued down to the month of January, 1878. After that date the prices of the Chicago No. 2 spring, or the red winter, are absent in such a way as to make further comparison impossible.

The Buffalo quotations substantially agree, then, with those of Chicago, in showing that at first the new milling process did not materially affect the prices of red winter and the ordinary spring wheat of the United States. The same fact, about the prices of white winter, may be noted from the reports of the Buffalo market. Comparing it with any of the ordinary grades of spring wheat it is found that white winter, from 1857 to 1880 continuously, sold for a large excess over all the spring wheat, with the exception of that raised in the Northwest. The new process of milling did not then *at first* exert any great influence upon the prices of the leading grades of wheat sold in the markets of the nation.

The foregoing fact has been noted that the effect of the new methods of milling upon the selling price of Minnesota wheat may be definitely established. Tables II, III and IV exhibit the fact that in the years 1871 and 1872, when Minnesota wheat was first reported at Buffalo, it was sold at a price of from six to twenty cents a bushel less than red and amber wheat, and from seventeen to fifty cents less than the best white winter wheat. In the year 1875, when the grade of No. 1 Minnesota hard had been established, it was quoted at an average price of three cents a bushel more than red and amber. This same grade of wheat, in the following year, 1876, succeeded in gaining the same advantage over the best white winter. The pre-eminence then attained by the Minnesota wheat by the aid of the new process of milling, it has since continuously maintained, with some temporary exceptions, due to the defects in the crops raised in a few years. The excess in the selling price of No. 1 hard over red winter has, at times, been as much as thirty-two cents a bushel, and the corresponding excess over white winter has been twenty-eight cents. The average of

this excess of Minnesota No. 1 hard over the price of the best winter wheat has, for the past sixteen years, been not far from ten cents a bushel. The same wheat, in the Buffalo market, before 1874, had sold for from fifteen to fifty cents less than the winter wheat. The milling inventions of Minnesota thus from the first added on an average from twenty-five to forty cents to the selling price of every bushel of good milling wheat which was raised in Minnesota and the two Dakotas. This was done without at first affecting in the least the value or selling price of other wheat marketed in the United States.

This change, produced by the new process of milling, added millions of dollars to the annual income of the farmers of the Northwest. The reason for this marvelous addition to their income from this invention follows from the fact that by the new process, or, by the gradual reduction method of milling, flour made from the Minnesota wheat is entirely freed from all particles of bran, and a perfect flour is produced. The large amount of gluten which it contains makes it superior even to the best white winter wheat flour for bread making purposes.

This Minnesota patent flour, when sold in Chicago or elsewhere outside the State, brought from the first a price in excess of that for the best grades of white winter wheat flour. The prices of flour given in tables V and VII are for sales made at wholesale. Table V gives the weekly range of such prices at Chicago, and table VII presents an exhibit of the same at Buffalo. The difference between the prices of the best brands of winter and spring wheat flour, given in table V, are summarized in table VI. From 1860 to 1874 the best flour made from winter wheat sold for a much higher price than the best flour made from spring wheat. This excess of price at one time rose to \$6.75 per barrel. With the introduction of the new process there came a change. The Minnesota patent has, since 1874 or 1875, sold for the most. The present excess in value of the Minnesota is, at Chicago, from 25 cents to one dollar. This excess has, however, in the past, been as much as \$2.25 a barrel. Tables VII, VIII, IX, and X, giving prices and comparisons for Buffalo, show, for most years, the same essential difference as has been noted for Chicago. A difference will be noted, however, between the prices at Buffalo and Chicago during the last few years. At Buffalo, in 1891, the quotations for winter and spring wheat flour were substantially the same. In Chicago, on the other hand, there was at that time a difference in the prices of the two kinds of from 25 cents to one dollar a barrel. In both markets the Minnesota hard wheat sold for several cents a bushel more than any grade of winter wheat. The explanation of this apparent anomaly is as follows: The Minnesota wheat is used at Buffalo and other Eastern milling centers to mix with the winter wheat in the manufacture of flour. A small amount of the Minnesota wheat thus used enables the miller, from winter wheat, to make substantially the same grade

of flour as that produced from all hard wheat. At least, the Buffalo quotations of flour, thus produced, seem to be evidence of that fact.

Chicago receives a small amount of winter wheat flour thus produced by mixing a little Minnesota wheat with a body of winter grain. This flour, at Chicago, sells for about the same figure as the product made from all hard wheat. Chicago also receives a great amount of winter wheat flour from Kansas and other points where there is no such mixture of grains as is universally practiced by the millers of the East. This flour, manufactured wholly from winter grain, is sold at Chicago and elsewhere for a lower price than is the flour produced from all hard Minnesota wheat or a mixture of that grain with the proper amounts of its winter rival.

The new process of flour making, from 1870 to 1880, added from twenty to forty cents to the value of every bushel of hard wheat raised in the Northwest. This was because the millers, by that new process, were able to make a better selling flour therefrom than from any other grain. The general mixing of grain, above referred to, changed the selling price of the flour made from the winter wheat. It brought it up to that of the flour made from all Minnesota grain. It did not, however, destroy or lessen the relative greater value of the wheat from the Dakotas and Minnesota. That wheat still sells at the same relatively high price given to it as the result of the introduction of the new process of milling.

The custom of mixing wheat has not, therefore, worked to the disadvantage of the farmers of the Northwest. It has, however, been a great boon to the masses of the nation. The new process, this mixing of wheat, and all the other improvements and changes of the past twenty years, have co-operated in giving to the millions a better quality of flour. By the old methods of milling, in general use in the United States before La Croix built his mill at Faribault, it was impossible to make any good flour from great quantities of the wheat raised in the country. A few mills could, from selected white winter wheat, make a choice brand of flour. This was sold at an exorbitant price to the few who could afford it. That choice white wheat brought a high price to make this extra flour for the people of good incomes. The new process showed the world how to make good flour from the spring wheat of the Northwest. It thus added to the amount of good flour made and sold in the nation. Then came the scouring and cleaning of grain which became common among millers with the use of the gradual reduction process. This increased the relative amount of good flour. In some respects it improved the character of all that was made. Then came the mixing of winter and spring wheat. This also improved the quality of a great amount of flour. Further changes of the same character have followed the improvements in milling machinery and methods which have been devised in the past twenty years. La Croix, at Faribault,



only made a very small amount of his best flour out of a given quantity of wheat, not to exceed twenty per cent. of his product. The great amount of that product was of a lower grade. The amount of patents made from any number of bushels has steadily increased with the years, until with the best of mills it is about seventy per cent., and the proportion of lower grades of product has as uniformly decreased. The whole body of the millers are educated in improved methods and prices and profits everywhere undergo many and radical changes. Some of those changes are exhibited in Table XI.

In one column are shown the prices of flour made from Minnesota wheat and manufactured in the West, (Minneapolis.) In the parallel columns are presented the prices of the same grade of flour made from the same wheat, but manufactured in the city of Buffalo. The prices given are in each case the value noted in sales in Buffalo. The differences between the prices of the flours thus manufactured in Minneapolis and in Buffalo are summarized in a further column of the same table. A glance at that table discloses this fact. In 1875 the best patent flour made in the West (Minneapolis) sold in Buffalo for from 50 cents to one dollar a barrel more than the best flour manufactured in Buffalo. This additional price for the western made flour marks the extra profit of the early Minnesota millers over that realized by the best millers outside their State. It measures the money which they secured as their compensation for revolutionizing the nation's method of flour-making and for adding millions of dollars to the annual income of the farmers of their section from their wheat fields. Table XI shows that the early special profits of the Minnesota millers has vanished. That profit and pre-eminence vanished in or about 1886. To be sure, the Buffalo papers continued to quote, in separate columns, the prices of western and Buffalo made flour until 1889. By that time some of the eastern mills made as good flour as some of the western. The product of each mill was sold on its merits or reputation, without regard to the locality of the same. The mills which introduced the improved methods have proven to be national school-masters in teaching their rivals the art of good flour making. Their success as such teachers is shown in part by that portion of table XI already referred to. It is, however, shown in a more striking way by the last column of the same table. That column exhibits the extreme variations, in prices, at Buffalo, of all the patent flours made by millers east and west; good, bad and indifferent. In 1875 some millers manufactured patent flour which sold for \$2.50 more than the flour sold under the same name, but manufactured by the least efficient of their would-be rivals. If the poorer miller could sell his flour without a loss, the better miller made a profit represented by this extreme difference of \$2.50. The profit, at the time, was probably less than this sum, as without doubt the poorer miller must have disposed of his product at a loss. But the fact disclosed by the table indicates,

at least, a very large profit for the millers who first learned how to make the best flour by the new process. Their profits stimulated other flour-makers to adopt better methods, and how generally this has been done for some sections of our country is shown by this table for the last few years. The variation in the prices of patent flours which, at Buffalo in 1875, was \$2.50, was, in the last few years, only 25 cents. Some millers still make better flour than their rivals. At least they seem to sell their products for about 25 cents a barrel the most. It should be further noted, in this connection, that some mills require more wheat to make a given amount of flour than others. Those are the most profitable, other things being the same, which secure the greatest amount of good selling product from the least amount of grain. Then some mills, by improved machinery or methods, effect savings in the labor and expenses of management. These savings effected by the best mills, and the higher prices secured for their superior product, are the only sources of the modern millers' profits.

The facts which have been here stated are evidence of the leveling nature or character of modern milling methods. Those methods may be called republican or democratic. Before their introduction only a small relative amount of the best flour was anywhere manufactured. That flour was monopolized by the families possessed of good incomes. Now, the greater amount of flour manufactured is first class. The man in the hovel buys the same brands as the resident in the mansion. The progress of the milling business makes this condition of affairs more universal. Not only does the modern milling methods thus tend to place all consumers of flour upon the same level, they are, in some measure, aiding in destroying the old superiority of some kinds of wheat. It has been mentioned that at first this new method of milling did not change the relative prices of red and spring wheat at Chicago. It did not change the relative prices of these grains, or those of red and white winter wheat at Buffalo. Twenty years of this new process has, however, touched all grades and qualities of grain. It has, as can be seen from Table I, brought No. 2 spring and No. 2 red winter to exactly the same range of values. It has also, in large degree, destroyed the superior selling price of the white over the red winter wheat. One kind of wheat alone continues to be quoted at a higher price than any of its rivals. That is the hard spring wheat of the Northwest. It possesses its greater value, not so much because it furnishes a few people with a superior article of flour. It is because by mixing with other grains it aids in placing the flour eaters upon an equality. The old white wheat, twenty years ago, brought a high price, because it aided in giving the few rich a good article of diet. The Minnesota hard wheat brings that superior price for the opposite reason. It aids the millions to a better bread than was otherwise possible. It aids in bringing them, in the use of this staple food product, on a level with the most favored.



In social questions no one fact or individual achievement stands alone. All are connected and all rise and fall together. Make an improvement at one place and it goes on multiplying its influence in hitherto undreamed of ways and places. The increase noted, in the relative amount of good flour manufactured from wheat, has added to the annual consumption of that cereal throughout the land. Table XII, taken from the Statistical Abstract of the United States government, shows the production and consumption of wheat in the United States each year since 1869. It also shows the per capita consumption of that cereal. That consumption increased from 1871, when the new process of milling was introduced, to date, one and four-tenths bushels. In other words, the people of the United States have found, in their own borders, a market for ninety millions of bushels of wheat by reason of progress in methods of flour making and the improved social conditions which have come to prevail in the land. The improved methods of milling should be given credit for a large share of this addition to the amount of wheat marketed at home. The amount of this increased home consumption, caused by the increased per capita consumption, is larger than was the exportation in over one-half of the years whose record is given on the table. New milling inventions are then to rank with foreign exportation as a factor for maintaining wheat prices in the nation.

Attention has been called to the fact that the new process of milling added, shortly after its introduction, from twenty to forty cents a bushel to the value of all the spring wheat raised in the Northwest. This increase poured a stream of gold, otherwise not attainable, into the agricultural region. The old war prices of wheat which, as shown by Tables I and II, and exhibit A, came to an end not far from 1870, had, in their duration, greatly stimulated the cultivation of wheat in Minnesota. In that year Minnesota possessed a population of 439,706 and the Dakotas had 14,181. The wheat raised in Minnesota that year was 16,022,000 bushels. The collapse of the war prices, which occurred about 1870, made wheat raising less profitable than it previously had been. As a consequence agriculture, in 1871, was relatively depressed. The "new" process, which was then introduced, created an increased demand for hard wheat, raised its price and thus changed the situation for the farmers and all dependent upon them. A great immigration, in a short time, set in, for the unsettled wheat lands of Minnesota and the Dakotas. An immense impetus was given to railroad building through all the opening territory of the Northwest. The population of Minnesota and the Dakotas increased with unprecedented rapidity. In 1890 Minnesota had 1,300,017 and the Dakotas had 510,275 inhabitants. The wheat production of the former had risen, until in 1891, it was 55,333,000 bushels and that of the latter 81,819,000. This enormous growth of the wheat industry of the three



states is presented in Table XIII, taken from the reports of the United States department of agriculture. The increase in wheat values, caused for this particular kind of wheat by the introduction of the new process of milling, must be considered as one of the most potent factors in the rapid settlement of these three states since the year 1870. It is extremely difficult to estimate accurately the effect of such invention, as is the subject of this investigation, upon the movement of the population and the settlement of states. And yet, after allowing for the value of all other co-operating causes, it appears tolerably certain that with no change in the old methods of milling the present population of the three states of the Northwest would not be much, if any, over one-half of what it now is. The mills, by their improvements, increased the value of every bushel of the farmer's wheat, and hence of his profits. Increased profits in agriculture hastened the settlement of this new territory, stimulated the building of railroads. The new farms opened called for furniture, farming implements and all the many articles of modern manufacture and commerce. The cities of the Northwest grew as they erected factories and stores for supplying the wants of the farmers in the growing and prosperous agricultural sections.

In this chapter mention has already been made of some of the direct and indirect results and effects following from the introduction into Minnesota of improved methods of milling. Their direct results upon wheat prices, production and consumption can be definitely measured. The accompanying tables give the data for that purpose. The milling inventions, by adding twenty and more cents to the value of every bushel of wheat raised in the Dakotas and Minnesota since 1873, added to the income of the farmers of those states, in the year 1891 alone, the sum of \$27,000,000. They give to the average citizen of the land a better quality of bread for daily consumption and aid in giving him a greater amount of the same. All this is measured in bushels and dollars and grades of flour. But by what standard can be gauged the indirect effects of these same devices of the miller's art? The health and happiness of the millions have, in many ways, been effected and that for the better. This, as well as the added income of the farmers, caused, in the manner traced in this report, must be considered by the student of social science in measuring the value to the state and nation of the changes wrought by the introduction of the new process of milling by the manufacturers of Minnesota.

## EXHIBIT A.

## MISCELLANEOUS QUOTATIONS OF WHEAT AT BUFFALO, N. Y., FROM 1855 TO 1870.

September 11, 1855. White Ohio, \$1.70; white Canada, \$1.78; red Illinois, \$1.48; spring, \$1.30; Chicago spring, \$1.26.

May 2, 1856. White (good), \$1.65; white southern, \$1.72-\$1.80; common Michigan white, \$1.60; white Canada handsome, \$1.80.

May 14, 1856. Illinois spring, \$1.00; white Wisconsin, \$1.50.

May 22, 1856. White winter, \$1.50; Canada spring, \$1.30.

June 4, 1856. Chicago spring, \$1.20; white Milwaukee, \$1.50.

October 4, 1856. White Michigan, \$1.44; white Illinois, \$1.45; Chicago spring, \$1.16; red Illinois, \$1.30; white Michigan, \$1.42; Milwaukee club, \$1.16.

May 25, 1857. Chicago spring, \$1.27; white Wisconsin, \$1.75; Milwaukee club, \$1.33.

October 21, 1857. Chicago spring, 80c; white Indiana, \$1.10; Milwaukee club, 83c; white Wisconsin, \$1.06; Canada club, 85c; white Michigan, \$1.16.

June 7, 1858. Chicago spring, 75c; Racine spring, 75c; white Indiana, 87½-90c; Milwaukee club, 77-78c.

October 26, 1858. Milwaukee club, 81-82c; white Canada, \$1.15; Chicago No. 2, 67c; Canada club, 94c; red Indiana, 97c.

June 14, 1859. Red western, \$1.40; white western, \$1.60-1.64; white Kent, \$1.70-1.80; red Ohio, \$1.55-1.60; white Ohio, \$1.69; Milwaukee club, \$1.25.

September 25, 1859. Chicago spring, 82½-85c; Milwaukee club, 85c; red Illinois, 90c; white Canada, \$1.08-1.10; white Kent, \$1.30; Canada club, 86-90c; red Michigan, \$1.00; red Ohio, \$1.00; white Indiana, \$1.13-1.14; white Michigan, \$1.12½; white Ohio, \$1.12.

June 5, 1860. No. 2 Chicago, \$1.07-1.12½; white winter, \$1.35-1.37½; white Ohio, \$1.35-1.50; red winter, \$1.23-1.28; Canada spring, \$1.12-1.15; white Canada, \$1.38; Milwaukee club, \$1.15.

October 16, 1860. Chicago spring, \$1.05-1.09; Canada club, \$1.06-1.07; red winter, \$1.16-1.21; white Michigan, \$1.23-1.30; white Canada, \$1.22-1.35; Milwaukee club, \$1.09½-1.12; No. 2 Chicago, \$1.03-1.07½; white Ohio, \$1.21-1.22.

May 18, 1861. White Canada, \$1.25-1.35; white Michigan, \$1.30; Milwaukee club, 97½-98c; No. 2 Chicago spring, 93c; Sheboygan spring, \$1.05.

October 25, 1861. Red winter, \$1.09; Canada club, 94½c; white Michigan, \$1.10; white Kent, \$1.24; amber Kent, \$1.24; amber Michigan, \$1.10.

May 19, 1862. Milwaukee club, 87-87½c; white Canada, \$1.05-1.16; white Michigan, \$1.18-1.19; red Indiana, \$1.05; Kenosha spring, 87c.

October 7, 1862. White Canada, \$1.23½; red Illinois, \$1.10; red Ohio, \$1.11-1.12½; Kenosha spring, 98c; white Kentucky, \$1.30.

October 13, 1863. White Michigan, \$1.62; amber Michigan, \$1.25-1.37; red winter, \$1.32-1.35; Milwaukee club, \$1.24-1.26; Chicago No. 2 spring, \$1.18-1.22; Racine spring, \$1.20-1.23; Sheboygan club, \$1.26-1.30.

October 31, 1864. Chicago No. 2 spring, \$1.80-1.95; Milwaukee, \$1.85-1.95; red winter, \$2.12; white Canada, \$2.15; amber Michigan, \$2.10-2.12; white Cincinnati, \$2.25-2.30; Kentucky white, \$2.45.

May 15, 1865. Red winter, \$1.55-1.65; amber Iowa, \$1.50; southern Illinois, \$1.65-1.70; Kent white, \$2.10-2.15; Ohio red, \$1.45; No. 1 Milwaukee, \$1.25; No. 1 Chicago, \$1.30-1.31; No. 2 Chicago, \$1.20.

May 15, 1866. No. 2 Milwaukee club, \$1.80; No. 1 Milwaukee club, \$2.00; amber Michigan, \$2.75-2.80; white Michigan, \$3.00; white Canada, \$3.05.

May 20, 1867. Amber Canada, \$3.25; white Canada, \$3.45; No. 2 Chicago, \$2.90; Canada spring, \$3.05-3.10.

May 19, 1868. White Kentucky, \$2.83; white Michigan, \$2.90; white Canada, \$2.75-2.83; No. 1 spring, \$2.30; No. 2 spring, \$2.20.

May 26, 1869. No. 2 Chicago, \$1.26; No. 1 Milwaukee club, \$1.30; white winter, \$1.70; No. 1 spring, \$1.35.

October 19, 1869. No. 2 Milwaukee club, \$1.15-1.17; No. 2 Chicago, \$1.10; red winter, \$1.25.

TABLE I.

A COMPARISON OF THE PRICES OF NO. 2 SPRING WHEAT AND NO. 2 RED WINTER WHEAT AT CHICAGO, ILL., FROM 1860 TO 1891.

Year and Month	Price of No. 2, Spring.	Price of No. 2, Red Winter.	Excess in Price of Red Winter.	Year and Month	Price of No. 2, Spring.	Price of No. 2, Red Winter.	Excess in Price of Red Winter.
1860.				1871.			
Jan....	.94½@.96	.....@.....	.....@.....	Jan....	1.08¾@1.11½	.....@.....	.....@.....
Feb....	.97 .98	.....	.....	Feb....	1.21½ 1.32	.....	.....
March..	1.04 1.07	.....	.....	March..	1.22¾ 1.26½	.....	.....
April... 96 .98	.....	.....	.....	April... 1.24½ 1.29	.....	.....	.....
May.... 1.10 1.14	.....	.....	.....	May.... 1.27 1.30	.....	.....	.....
June... 1.05½ 1.07½	.....	.....	.....	June... 1.25½ 1.27	.....	.....	.....
July.... 1.05 1.06	.....	.....	.....	July.... 1.23¼ 1.29	1.21 1.25½	—¼ —3½	.....
Aug.... .93 .94	.98 .99	5 5	.....	Aug.... .99½ 1.07	1.05 1.21	5½ 14	.....
Sept.... .84 .88	.....	.....	.....	Sept.... 1.06 1.32	1.09 1.20	3 —12	.....
Oct.... .85 .87	.....	.....	.....	Oct.... 1.17 1.24	1.23 1.30½	6 6½	.....
Nov.... .80½ .81	.87 .88	6½ 7	.....	Nov.... 1.18 1.21	1.25 1.27	7 6	.....
Dec.... .67 .68	.....	.75 8 7	.....	Dec.... 1.17¼ 1.19¾	1.24 1.25	6¾ 5½	.....
1861.				1872.			
Jan.... .76¼ .76½	.....	.....	.....	Jan.... 1.20½ 1.25	.....	.....	.....
Feb.... .74½ .75	.....	.....	.....	Feb.... 1.23½ 1.24½	..... 1.37	13½ 12½	.....
March.. .75 .75½	.....	.....	.....	March.. 1.23¼ 1.25¾	.....	.....	.....
April... .79 .81	.....	.....	.....	April... 1.19¼ 1.23	.....	.....	.....
May.... .88 .91	.....	.....	.....	May.... 1.34¼ 1.42¾	.....	.....	.....
June... .73 .73½	.....	.....	.....	June... 1.43 1.53¼	.....	.....	.....
July.... .55 .56	.....	.....	.....	July.... 1.20 1.27½	.....	.....	.....
Aug.... .68 .68½	.75½ .76	7½ 7½	.....	Aug.... 1.28½ 1.37½	..... 1.75	46½ 37½	.....
Sept.... .61 .62	..... .68	7 6	.....	Sept.... 1.18½ 1.24	..... 1.30	11½ 6	.....
Oct.... .74 .75	.....	.....	.....	Oct.... 1.11½ 1.21	.....	.....	.....
Nov.... .67½ .68½	.74 6½	6½ 6½	.....	Nov.... 1.07½ 1.09½	..... 1.50	41½ 40½	.....
Dec.... .63 .63½	.71 .72	8 8½	.....	Dec.... 1.08½ 1.11½	1.52	.....	.....
1862.				1879.			
Jan.... .65 .65½	.71 .72	6 6½	.....	Jan.... .81½ .83	.86 .86½	4½ 3½	.....
Feb.... .68½ .69½	..... .75	6½ 5½	.....	Feb.... .85¼ .86¼	.86 .89½	3¼ 3¼	.....
March.. .73 .74	..... .81	8 7	.....	March.. .92¼ .94½	.95 .98	2¼ 3¾	.....
April... .72½ .73	.79 .80	6½ 6	.....	April... .88¾ .93½	1.01 1.04	12½ 10½	.....
May.... .75 .76	..... .85	10 9	.....	May.... .89½ .93	.99 .99½	9½ 6½	.....
June... .70 .71½	..... .82	12 10½	.....	June... 1.01 1.03½	1.02 1.06	1 2½	.....
July.... .72 .75	..... .82	10 7	.....	July.... .98 1.10	1.00 1.02	2 —8	.....
Aug.... .87½ .89	..... .95	7½ 6	.....	Aug.... .86¼ .92	.96 .97½	9¾ 5½	.....
Sept.... .79½ .80½	..... .92	12½ 11½	.....	Sept.... .85 .87½	.92 .94¼	7 7	.....
Oct.... .80 .82½	.93 .94	13 11½	.....	Oct.... 1.02¼ 1.07½	1.09 1.12½	6¼ 5½	.....
Nov.... .78 .79	..... .92	14 13	.....	Nov.... 1.12 1.16¼	1.17 1.24½	5 8¼	.....
Dec.... .80 .82	.98 .98½	18 16½	.....	Dec.... 1.22 1.26	1.25 1.27½	3 1½	.....
1863.				1880.			
Jan.... .88 .90	1.04 1.05	16 15	.....	Jan.... 1.30 1.32½	1.30 1.31½	.....	.....
Feb.... 1.06 1.09	1.25 1.27	19 16	.....	Feb.... 1.18¼ 1.21½	1.21½ 1.27	3½ 5½	.....
March.. 1.10 1.12	1.27 1.29	17 15	.....	March.. 1.22½ 1.25¼	1.24½ 1.25	2 —¾	.....
April... 1.05 1.06½	1.21 1.22	16 14½	.....	April... 1.10 1.15½	1.12 1.16	2 2	.....
May.... .94 .99	.....	.....	.....	May.... 1.12 1.14	..... 1.08½	—3½ —5½	.....
June... .94 .97	.....	.....	.....	June... 1.00½ 1.14	1.03 1.06	2½ —8	.....
July.... .94 .96	1.10 1.10	16 14	.....	July.... .86¼ .89	.89 .95	2¼ 6	.....
Aug.... .88 .90	.96 1.02½	8 12½	.....	Aug.... .88 .92	.91½ .97	3½ 5	.....
Sept.... .90 .93	.95 5	5 2	.....	Sept.... .86¼ .88½	.88 .96	1½ 7½	.....
Oct.... 1.00 1.01	1.05½ 1.06	5½ 5	.....	Oct.... .99½ .94¼	.92¾ .98	2½ 3¾	.....
Nov.... 1.03 1.05	1.17 1.18	14 12	.....	Nov.... 1.01¼ 1.03¼	1.01¾ 1.03½	¾ 1¼	.....
Dec.... 1.06 1.06½	1.14 1.14	8 7½	.....	Dec.... 1.05¾ 1.10¾	1.03 1.07½	—2¾ —2¾	.....
1864.				1881.			
Jan.... 1.11 1.11½	.....	.....	.....	Jan.... .95¾ .98¼	.94 .97¾	—1¾ —¾	.....
Feb.... 1.11 1.11½	.....	.....	.....	Feb.... .96¾ .99¾	.96½ .99¼	¾ —¾	.....
March.. 1.08 1.10¾	1.20 1.20	12 9¾	.....	March.. .98¾ .99¾	.98 1.01½	1¾ 1¾	.....
April... 1.10¼ 1.10½	.....	.....	.....	April... 1.00¾ 1.03¾	.99¼ 1.03	1¾ —¾	.....
May.... 1.16 1.17½	.....	.....	.....	May.... 1.01¾ 1.04¾	1.08 1.09	6¾ 4¾	.....
June... 1.25½ 1.26	.....	.....	.....	June... 1.06¾ 1.11¾	1.06 1.11	—¾ —¾	.....
July.... 1.88 1.94	.....	.....	.....	July.... 1.10½ 1.13½	1.12 1.21	—1½ 7½	.....
Aug.... 1.88 1.92	2.15 2.16½	27 24½	.....	Aug.... 1.19 1.23½	1.14 1.23	—5 —1½	.....
Sept.... 1.94 2.02	2.05 2.06	11 4	.....	Sept.... 1.22 1.38	..... 1.31	9 —7	.....
Oct.... 1.41 1.50	.....	.....	.....	Oct.... 1.34½ 1.40¼	1.42 1.43	—7½ 2¾	.....
Nov.... 1.80 1.81	1.95 1.95	15 14	.....	Nov.... 1.25¾ 1.31½	.....	.....	.....
Dec.... ..... 1.50	..... 1.65	..... 15	.....	Dec.... 1.23½ 1.28½	.....	.....	.....



TABLE I.—Continued.

Year and Month	Price of No. 2 Spring.	Price of No. 2 Red Winter.	Excess in Price of Red Winter.	Year and Month	Price of No. 2 Spring.	Price of No. 2 Red Winter.	Excess in Price of Red Winter.
1882.				1887.			
Jan....	1.25 $\frac{3}{4}$ @1.27 $\frac{1}{2}$	.....@.....	.....@.....	Jan....	.78 @.80 $\frac{1}{2}$	.79 $\frac{3}{4}$ @.80 $\frac{1}{4}$	1 $\frac{3}{4}$ @— $\frac{1}{4}$
Feb....	1.20 $\frac{1}{2}$ 1.32 $\frac{1}{2}$	.....	.....	Feb....	.76 $\frac{1}{2}$ .78 $\frac{1}{4}$ .78 $\frac{3}{4}$	.79 $\frac{1}{4}$ .79 $\frac{3}{4}$ .79 $\frac{1}{2}$	1 $\frac{3}{4}$ 1 $\frac{1}{2}$ 1 $\frac{1}{2}$
March..	1.24 $\frac{1}{2}$ 1.27	.....	.....	March..	.72 $\frac{1}{2}$ .75 $\frac{3}{4}$ .77 $\frac{3}{8}$	.77 $\frac{1}{2}$ .77 $\frac{1}{2}$ .77 $\frac{1}{2}$	5 1 $\frac{1}{2}$ 1 $\frac{1}{2}$
April... 1.34 $\frac{1}{2}$ 1.36	.....	.....	.....	April... 1.77 $\frac{1}{2}$ .81 $\frac{1}{2}$ .78	.....	.81 $\frac{1}{2}$ .81 $\frac{1}{2}$	.....
May.... 1.25 $\frac{1}{2}$ 1.40	.....	1.40	.....	May.... .80 $\frac{1}{2}$ .83 $\frac{3}{4}$ .80 $\frac{3}{4}$	.....	.85 $\frac{1}{2}$ .85 $\frac{1}{2}$	.....
June.... 1.24 $\frac{1}{2}$ 1.27 $\frac{1}{2}$	.....	.....	.....	June.... .82 $\frac{1}{2}$ .89 $\frac{1}{2}$ .87 $\frac{1}{2}$	.....	.89 $\frac{1}{2}$ .89 $\frac{1}{2}$	.....
July.... 1.32 1.35	1.30	1.40	—2	July.... .68 $\frac{1}{2}$ .69 $\frac{1}{2}$ .72 $\frac{1}{4}$	.....	.73 3 $\frac{3}{4}$	3 $\frac{3}{4}$
Aug.... 1.10 1.35	.98	1.05	12	Aug.... .66 $\frac{1}{2}$ .69 $\frac{1}{2}$ .70	.....	.71 $\frac{1}{2}$ .71 $\frac{1}{2}$	.....
Sept.... .98 $\frac{1}{2}$ 1.03 $\frac{1}{2}$	1.00 $\frac{1}{2}$	1.06	2	Sept.... .68 $\frac{1}{4}$ .69 $\frac{1}{2}$ .70 $\frac{3}{4}$	.....	.71 $\frac{1}{2}$ .71 $\frac{1}{2}$	.....
Oct.... .93 $\frac{3}{4}$ .94 $\frac{3}{4}$	.95 $\frac{1}{2}$	1.00	1 $\frac{1}{4}$	Oct.... .61 $\frac{1}{2}$ .71 $\frac{1}{2}$ .71	.....	.73 $\frac{1}{2}$ .73 $\frac{1}{2}$	.....
Nov.... .92 $\frac{1}{4}$ .93 $\frac{3}{8}$	.94 $\frac{1}{2}$	.96 $\frac{1}{4}$	2 $\frac{1}{4}$	Nov.... .71 $\frac{1}{2}$ .72 $\frac{1}{2}$ .72	.....	.73 1 $\frac{1}{2}$	2 $\frac{1}{2}$
Dec.... .93 $\frac{3}{4}$ .94 $\frac{1}{2}$	.94	.96	1 $\frac{1}{4}$	Dec.... .75 $\frac{1}{2}$ .78 $\frac{1}{2}$ .76	.....	.79 $\frac{1}{2}$ 1 $\frac{1}{2}$	.....
1883.				1888.			
Jan.... .93 $\frac{1}{2}$ .96	.95	.98	1 $\frac{1}{2}$	Jan.... .77	.77 $\frac{1}{2}$	.....	.....
Feb.... 1.01 $\frac{1}{2}$ 1.06	1.03 $\frac{1}{2}$	1.07 $\frac{1}{2}$	2	Feb....	.....	.79 $\frac{1}{4}$	.....
March.. 1.06 $\frac{1}{2}$ 1.09 $\frac{1}{2}$	1.00 $\frac{1}{2}$	1.10 $\frac{1}{2}$	3	March.. .79	.....	.81 .81 $\frac{1}{2}$	2 1 $\frac{1}{2}$
April... 1.03 1.07 $\frac{1}{4}$	1.07	1.08	4	April... .72	.75 $\frac{1}{2}$	.78 .80 $\frac{1}{2}$	6 5 $\frac{3}{8}$
May.... 1.11 1.13 $\frac{1}{2}$	1.13	1.14 $\frac{1}{2}$	2	May.... .81 $\frac{1}{4}$	.....	.86	4 $\frac{3}{4}$
June.... 1.12 $\frac{1}{2}$ 1.13 $\frac{1}{2}$	1.15	1.16 $\frac{1}{2}$	2 $\frac{3}{4}$	June.... .84	.84 $\frac{1}{2}$	.86	2 1 $\frac{1}{2}$
July.... .98 1.00 $\frac{1}{2}$	1.06	1.07 $\frac{1}{2}$	8	July.... .81 $\frac{1}{4}$	.82	.82 $\frac{1}{2}$	1 $\frac{1}{2}$
Aug.... 1.00 1.01 $\frac{1}{2}$	1.06	1.07	6	Aug....	.82 $\frac{1}{2}$	.....	3 $\frac{1}{2}$
Sept.... .99 1.01 $\frac{1}{2}$	1.06	1.07 $\frac{1}{2}$	7	Sept.... .92 $\frac{1}{2}$	.....	.92 $\frac{1}{2}$	— $\frac{1}{4}$
Oct.... .94 .96 $\frac{1}{2}$	1.01 $\frac{1}{2}$	1.02 $\frac{1}{2}$	7 $\frac{1}{2}$	Oct.... 1.16	1.17	1.16	.....
Nov.... .92 $\frac{3}{4}$ .94 $\frac{3}{8}$	.99	1.01	6 $\frac{1}{4}$	Nov.... 1.11 $\frac{1}{2}$ 1.13 $\frac{1}{2}$	1.11 $\frac{1}{2}$	1.13 $\frac{1}{2}$	.....
Dec.... .95 $\frac{3}{8}$ .98 $\frac{3}{4}$	.98	1.01	2 $\frac{1}{8}$	Dec.... 1.02 $\frac{1}{2}$ 1.03 $\frac{1}{2}$	1.02 $\frac{1}{2}$	1.03 $\frac{1}{2}$	.....
1884.				1889.			
Jan.... .93 $\frac{1}{2}$ .95 $\frac{1}{2}$	.97	.99 $\frac{1}{2}$	3 $\frac{1}{2}$	Jan.... .98	1.02	.98	1.02
Feb.... .91 $\frac{1}{4}$ .91 $\frac{1}{2}$	.97	1.00	5 $\frac{1}{4}$	Feb.... .93	.96 $\frac{3}{4}$	.93	.96 $\frac{3}{4}$
March.. .90 $\frac{3}{4}$ .93 $\frac{1}{4}$	.98	1.02	7 $\frac{1}{4}$	March.. 1.03 $\frac{1}{2}$ 1.07 $\frac{1}{2}$	1.03 $\frac{3}{4}$	1.07 $\frac{1}{2}$	.....
April... .78 $\frac{3}{4}$ .80 $\frac{1}{4}$	.....	.96	17 $\frac{1}{4}$	April... .80 $\frac{1}{2}$ 1.03 $\frac{1}{4}$	.80 $\frac{1}{2}$	1.01 $\frac{1}{2}$	.....
May.... .91 .94 $\frac{1}{2}$	1.03 $\frac{1}{2}$	1.05	12 $\frac{1}{2}$	May.... .79 $\frac{1}{2}$ .83	.79	.82	— $\frac{1}{2}$
June.... .87 $\frac{1}{4}$ .89 $\frac{3}{8}$	.08 $\frac{3}{4}$	.96	6 $\frac{1}{2}$	June.... .75 $\frac{1}{2}$ .76 $\frac{1}{2}$	.75 $\frac{1}{2}$	.78	1 $\frac{1}{2}$
July.... .82 .85 $\frac{1}{8}$	.....	.....	.....	July.... .80	.84 $\frac{1}{2}$	.82	2
Aug.... .83 .84 $\frac{1}{2}$	.88	.90 $\frac{1}{2}$	5	Aug.... .78	.79 $\frac{1}{4}$	.83	— $\frac{1}{4}$
Sept.... .77 $\frac{3}{4}$ .79 $\frac{3}{4}$	.81	.82 $\frac{1}{4}$	3 $\frac{1}{4}$	Sept.... .76 $\frac{1}{4}$ .79 $\frac{1}{4}$	.76 $\frac{1}{4}$	.78 $\frac{1}{4}$	—1
Oct.... .77 $\frac{1}{4}$ .79 $\frac{3}{8}$	.80	.83	2 $\frac{3}{4}$	Oct.... .80 $\frac{1}{4}$ .82	.80 $\frac{1}{4}$	.82	.....
Nov.... .73 $\frac{3}{8}$ .75 $\frac{3}{8}$	.74 $\frac{3}{4}$	.77	1 $\frac{1}{8}$	Nov.... .77 $\frac{3}{8}$ .80 $\frac{1}{8}$	.77 $\frac{3}{8}$	.79 $\frac{1}{4}$	.....
Dec.... .72 .73 $\frac{3}{8}$	.73 $\frac{1}{2}$	.74 $\frac{1}{4}$	1 $\frac{1}{2}$	Dec.... .78 $\frac{3}{8}$ .90	.78 $\frac{3}{8}$	.80	.....
1885.				1890.			
Jan.... .72 $\frac{1}{2}$ .78 $\frac{1}{4}$	.73 $\frac{1}{2}$	.79 $\frac{1}{2}$	1 $\frac{1}{2}$	Jan.... .77 $\frac{1}{2}$ .79	.77 $\frac{1}{2}$	.78 $\frac{1}{2}$	— $\frac{1}{8}$
Feb.... .76 $\frac{1}{2}$ .78 $\frac{3}{8}$	.79	.81	2 $\frac{3}{8}$	Feb.... .74 $\frac{1}{2}$ .75 $\frac{1}{2}$	.74 $\frac{1}{2}$	.75 $\frac{1}{2}$	— $\frac{1}{2}$
March.. .73 $\frac{3}{8}$ .77 $\frac{3}{8}$	.76 $\frac{1}{2}$	.78	3 $\frac{1}{8}$	March.. .76 $\frac{1}{4}$ .78 $\frac{1}{4}$	.76 $\frac{1}{4}$	.78 $\frac{1}{4}$	.....
April... .74 $\frac{3}{8}$ .78 $\frac{3}{8}$	.78 $\frac{1}{2}$	.81 $\frac{3}{4}$	3 $\frac{3}{8}$	April... .77 $\frac{1}{2}$ .79 $\frac{1}{2}$	.77 $\frac{1}{2}$	.79 $\frac{1}{2}$	.....
May.... .88 $\frac{3}{8}$ .91 $\frac{3}{4}$	.97 $\frac{1}{4}$	1.02 $\frac{3}{4}$	9 $\frac{1}{2}$	May.... .88 $\frac{1}{4}$ .94	.88 $\frac{1}{4}$	.94	.....
June.... .84 $\frac{3}{4}$ .89	.93 $\frac{1}{2}$	.94 $\frac{1}{2}$	5 $\frac{1}{2}$	June.... .89 $\frac{3}{4}$ .93	.87 $\frac{1}{4}$	.93	.....
July.... .86 $\frac{1}{2}$ .88	.92 $\frac{1}{2}$	.93	5 $\frac{1}{2}$	July.... .85	.88	.85 $\frac{1}{4}$	.....
Aug.... .86 $\frac{1}{4}$ .88 $\frac{1}{2}$	.90	.95	3 $\frac{1}{4}$	Aug.... .90	.94 $\frac{1}{4}$	.91	1
Sept.... .76 $\frac{1}{4}$ .80	.81	.86 $\frac{1}{2}$	4 $\frac{1}{4}$	Sept.... .97 $\frac{3}{4}$ 1.03 $\frac{1}{4}$	.90	1.03	2 $\frac{1}{4}$
Oct.... .84 $\frac{1}{4}$ .86 $\frac{3}{4}$	.89 $\frac{1}{2}$	.90 $\frac{1}{2}$	5 $\frac{1}{4}$	Oct.... .95 $\frac{1}{4}$ .97 $\frac{1}{2}$	.95 $\frac{1}{4}$	.97 $\frac{1}{2}$	.....
Nov.... .85 $\frac{1}{8}$ .87 $\frac{1}{8}$	.89	.90 $\frac{1}{2}$	3 $\frac{3}{8}$	Nov.... .9 $\frac{3}{4}$ 1.01 $\frac{1}{2}$	.98 $\frac{3}{4}$	1.02	.....
Dec.... .84 $\frac{1}{4}$ .88	.90	.92	5 $\frac{1}{4}$	Dec.... .90 $\frac{1}{2}$ .92 $\frac{1}{4}$	.....	.92	1 $\frac{1}{2}$
1886.				1891.			
Jan.... .84 $\frac{1}{2}$ .84	.....	.....	.....	Jan....	.90	.91	93 $\frac{1}{4}$
Feb.... .78 $\frac{3}{8}$ .82	.....	.....	.....	Feb.... .95 $\frac{3}{8}$ .97 $\frac{1}{4}$	.97	.98	1 $\frac{1}{8}$
March.. .79 $\frac{1}{2}$ .83	.....	.....	.....	March..	.....	.96	.99 $\frac{1}{4}$
April... .75 $\frac{3}{8}$ .79	.....	.....	.....	April... 1.01 $\frac{1}{2}$ 1.05 $\frac{1}{2}$	1.02 $\frac{1}{2}$	1.05	1 $\frac{1}{2}$
May.... .77 $\frac{1}{2}$ .79	.....	.....	.....	May.... 1.05 $\frac{1}{4}$ 1.1	1.06	1.14	—3
June.... .72 $\frac{3}{4}$ .78	.72 $\frac{3}{4}$	.77 $\frac{1}{4}$	— $\frac{1}{4}$	June.... 1.00 $\frac{1}{2}$ 1.04 $\frac{1}{2}$	1.01	1.04	1 $\frac{1}{2}$
July.... .73 $\frac{1}{4}$ .72 $\frac{3}{8}$	.....	.....	.....	July.... .92	.96 $\frac{1}{2}$	.92	.94
Aug.... .73 $\frac{1}{4}$ .75	.75 $\frac{1}{4}$	.77	2	Aug.... .86 $\frac{1}{2}$ .89 $\frac{1}{4}$	.87	.90	.....
Sept.... .75 $\frac{3}{8}$ .76 $\frac{1}{2}$	.77 $\frac{1}{2}$	.78	1 $\frac{1}{8}$	Sept.... .95 $\frac{1}{4}$ 1.03 $\frac{1}{4}$	.97	1.00 $\frac{3}{4}$	2
Oct.... .72 $\frac{1}{4}$ .73 $\frac{1}{4}$	.73 $\frac{1}{4}$	.75	1	Oct.... .94	.96 $\frac{1}{2}$	.94 $\frac{1}{2}$	.95 $\frac{1}{4}$
Nov.... .72 $\frac{1}{4}$ .73 $\frac{1}{4}$	.73 $\frac{1}{4}$	.74 $\frac{1}{4}$	.....	Nov.... .93 $\frac{1}{4}$ .97	.94 $\frac{1}{4}$	.97	.....
Dec.... .74 $\frac{3}{8}$ .78	.75	.78 $\frac{1}{2}$	.....	Dec.... .89 $\frac{1}{4}$ .92	.90	.92 $\frac{1}{2}$	.....

TABLE II.

Prices of Winter and Spring Wheat at Buffalo, N. Y., 1870-1891, (compiled from the market reports of the Buffalo Daily Courier.)

Month and day of Quotation.	Minnesota Spring.	Number One Spring.	Number Two Spring.	Red and Amber Winter.	White Winter.
1870.					
January 5.....	@ .....	\$1.14 @ .....	\$1.00 @ .....	\$1.20 @ .....	\$1.25 @ 1.40
February 1.....	.....	1.12 .....	1.02 .....	1.15 1.20	1.30 1.45
March 1.....	.....	1.12 .....	1.05 .....	1.15 1.20	1.30 1.40
April 2.....	.....	1.10 .....	1.00 1.03	1.18 .....	1.35 1.45
May 6.....	.....	1.07 .....	1.00 .....	1.18 1.20	1.35 1.45
June 17.....	.....	1.31½ .....	1.23½ 1.29	1.37 1.40	1.60 .....
July 8.....	.....	.....	1.15 .....	.....	1.60 .....
August 1.....	.....	.....	1.26 1.28	1.50 .....	1.72 .....
September 6.....	.....	1.12 .....	1.10 .....	1.18 .....	1.50 1.55
October 10.....	.....	1.19 1.20	1.17 1.18	1.20 1.27	1.40 1.50
November 3.....	.....	1.13 .....	1.05 .....	1.22 .....	.....
December 1.....	.....	.....	1.17½ .....	1.35 .....	1.35 .....
1871.					
January 7.....	.....	1.30 .....	1.25 .....	1.42 1.45	1.45 1.55
February 4.....	.....	.....	1.40 .....	1.50 .....	1.60 .....
March 11.....	.....	1.47 .....	1.43 1.45	1.46 1.50	1.56 1.62
April 1.....	.....	1.45 .....	1.40 .....	1.46 1.50	1.60 1.65
May 5.....	.....	.....	1.35 .....	1.42 1.50	1.60 1.65
June 3.....	.....	.....	1.38 1.39	1.52 .....	1.60 1.75
July 15.....	\$1.33 .....	.....	1.31 .....	1.39 1.40	1.50 1.60
August 19.....	.....	.....	1.19 .....	1.25 .....	.....
September 23.....	.....	.....	1.33 .....	1.40 .....	.....
October 7.....	.....	1.41 .....	1.39 1.40	.....	.....
November 18.....	1.43 .....	.....	1.38 1.40½	1.43 1.50	.....
December 16.....	1.36 1.37 .....	.....	1.33 1.35	1.50 1.52	1.60 1.62
1872.					
January 5.....	1.36 1.40 .....	.....	1.36 .....	1.52 .....	1.63 1.65
February 3.....	1.40 1.42 .....	.....	1.40 .....	1.50 1.55	1.65 .....
March 2.....	1.45 .....	.....	1.45 .....	.....	1.60 1.70
April 6.....	1.44 1.45 .....	.....	1.45 .....	.....	1.60 1.70
May 11.....	1.75 .....	.....	1.65 .....	1.90 1.95	2.05 2.15
June 8.....	1.60 .....	.....	1.57 .....	.....	2 02½ 2.10
July 6.....	.....	.....	1.34 1.35	.....	1.65 1.75
August 3.....	.....	.....	1.40 1.43	1.70 1.75	1.85 1.90
September 6.....	.....	.....	1.40 1.43	1.52½ .....	1.90 .....
October 5.....	1.45 1.50 .....	.....	1.40 1.42	1.55 1.60	1.80 1.86
November 2.....	1.40 1.47 .....	.....	1.35 1.38	1.53 1.54	1.65 1.80
December 7.....	.....	.....	1.35 1.40	1.50 1.62	1.70 1.85
1873.					
January 6.....	1.55 .....	.....	1.42 1.52	1.75 .....	1.90 1.95
February 1.....	1.64 .....	.....	1.50 1.57	1.80 .....	1.85 2.05
March 1.....	1.70 .....	.....	1.50 1.63	1.80 .....	1.80 2.05
April 5.....	1.68 .....	.....	1.45 1.56	1.75 1.80	1.75 2.00
May.....	.....	.....	.....	.....	.....
June 7.....	.....	1.47 .....	1.37 1.41	1.75 1.80	1.85 1.95
July 4.....	1.41 1.42 .....	1.41 1.42	.....	1.54 1.68	1.70 1.82½
August 2.....	1.38 1.39 .....	1.38 1.39	1.28 1.39	1.55 .....	1.70 1.85
September 6.....	.....	1.53 .....	1.39½ .....	1.40 1.55	1.70 1.85
October 4.....	1.37 .....	.....	1.26½ .....	.....	.....
November 8.....	1.28 .....	1.30 .....	1.17 1.22	1.40 1.50	1.60 1.70
December 6.....	.....	1.44 .....	1.35 1.37	1.55 .....	1.70 1.75
1874.					
January 3.....	.....	1.48 .....	1.36 1.42	1.55 .....	1.60 1.75
February 7.....	.....	1.54 .....	1.45 .....	1.60 1.62	1.70 1.75
March 7.....	.....	1.50 .....	1.40 .....	1.60 1.62	1.70 1.75
April 4.....	.....	1.52 1.55	1.40 1.44	1.51 1.55	1.60 1.73
May 2.....	.....	1.52 .....	1.45 .....	1.50 1.55	1.60 1.73
June 6.....	1.33 .....	1.37 .....	1.31 1.34	1.45 1.50	1.60 1.70
July 3.....	1.35 .....	1.32 1.34	1.30 .....	1.37 1.42	1.45 1.65
August 1.....	.....	1.30 .....	1.24 .....	1.22½ 1.25	1.30 1.40
September 5.....	.....	1.20 .....	1.08 1.13	1.15 .....	1.20 1.25
October 3.....	.....	1.15 .....	1.06 .....	1.14 1.19	1.20 1.30
November 7.....	.....	1.12 .....	.97 1.02	1.14 1.19	1.20 1.30
December 5.....	1.17 .....	1.14 1.16	1.04 1.07	1.12 1.19	1.25 1.30

TABLE II.—Continued.

Month and day of Quotation.	Minnesota Spring.	Number One Spring.	Number Two Spring.	Red and Amber Winter.	White Winter.
1875.					
January 3.....	\$1.18 @ .....	\$1.16 @ .....	\$1.03 @ 1.07	\$1.12 @ 1.19	\$1.20 @ 1.25
February 13.....	1.15 1.16	1.13 1.14	1.00 1.05	1.12 1.19	1.20 1.25
March 6.....	1.15 .....	1.12 1.15	1.00 1.05	1.12 1.19	1.20 1.25
April 3.....	1.18 1.20	1.18 .....	1.08 1.12	1.15 1.20	1.20 1.30
May 1.....	1.17 .....	1.23 1.25	1.13 1.18	.....	1.32 1.35
June 12.....	1.12½ 1.13	1.12½ .....	1.04 1.08½	.....	1.28 1.30
July 10.....	1.17 .....	1.17 .....	1.10 1.15	1.30 .....	1.35 .....
August 14.....	1.45 .....	1.38 1.40	1.30 1.35	1.50 .....	1.56 1.65
September 4.....	.....	1.38 .....	1.25 1.31	1.42 1.45	1.45 1.60
October 2.....	1.33 .....	1.24 1.30	1.23 1.25	1.30 .....	1.32 1.40
November 6.....	1.30 .....	1.31 1.32	1.21 .....	1.30 1.35	1.35 1.40
December 18.....	1.30 .....	1.25 1.27	1.18 1.20	1.30 1.35	1.34 1.38
	Number One Hard.	Number One Northern.	Number Two Northern.		
1876.					
January 3.....	\$1.37 @ .....	\$1.30 @ .....	..... @ .....	1.27 @ 1.33	1.34 @ 1.38
February 5.....	1.38 1.40	1.30 .....	.....	1.33 .....	1.30 1.40
March 4.....	1.37 .....	1.30 .....	.....	1.33 .....	1.30 1.39
April 1.....	1.38 1.39	.....	\$1.35 1.36	1.33 1.35	1.29 1.41
May 6.....	1.37 1.38	.....	1.35 .....	.....	1.28 1.38
June 3.....	1.35 .....	.....	.....	1.33 .....	1.32 1.44
July 1.....	1.25 1.27	.....	.....	1.25 1.28	1.25 1.28
August 5.....	1.17 .....	.....	.....	1.08 1.10	1.23 1.33
September 2.....	1.21 1.22	.....	.....	1.05 1.15	1.15 1.30
October 7.....	1.32 .....	.....	.....	1.10 1.18	1.17 1.30
November 18.....	1.35 1.36	.....	.....	1.25 1.30	1.32 1.38
December 2.....	1.35 1.36	.....	.....	1.25 1.30	1.32 1.38
1877.					
January 6.....	1.47 .....	1.40 .....	.....	1.35 1.40	1.38 1.47
February 3.....	1.60 1.63	1.40 .....	.....	1.45 1.50	1.48 1.65
March 3.....	1.65 .....	1.45 .....	.....	1.45 .....	1.55 1.65
April 7.....	.....	1.45 .....	.....	1.45 1.54	1.68 .....
May 19.....	1.95 .....	1.85 1.90	.....	.....	2.10 2.25
June 2.....	1.90 .....	.....	.....	.....	1.80 1.90
July 14.....	.....	1.67 .....	.....	1.70 1.80	1.70 2.10
August 4.....	.....	.....	.....	1.40 1.45	1.45 1.50
September 1.....	1.24 .....	1.22 .....	.....	1.25 1.30	1.30 1.35
October 6.....	1.26½ 1.27	1.26 .....	.....	1.33 1.35	1.40 1.45
November 3.....	1.25 1.27	.....	.....	1.32 1.38	1.35 1.42
December 1.....	1.27 1.29	1.25 .....	.....	1.32 1.38	1.35 1.42
1878.					
January 5.....	1.27 1.30	1.25 .....	.....	1.32 1.38	1.33 1.41
February 2.....	1.28 1.29	.....	.....	1.25 1.30	1.27 1.33
March 2.....	1.28 1.30	1.26 1.27	.....	.....	1.27 1.33
April 6.....	1.27 1.28	1.25 .....	.....	.....	1.33 1.40
May 10.....	1.21 .....	1.19 .....	.....	.....	1.30 1.37
June 16.....	1.07 .....	.....	1.02 .....	.....	1.18 1.22
July 7.....	1.03 .....	.98 .....	.....	.....	1.03 1.10
August 4.....	1.15 .....	1.11 .....	.....	.95 1.00	1.00 1.15
September 14.....	1.14 .....	1.11 .....	1.06 .....	.97 1.02	1.02 1.13
October 5.....	1.13 .....	1.10 .....	1.06 .....	.95 1.00	1.00 1.10
November 9.....	1.10 1.12	1.03 .....	.95 .....	.93 .95	.92 1.00
December 1.....	1.12 1.15	1.05 .....	.....	.95 1.03	.93 1.02
1879.					
January 5.....	1.10 .....	1.07 .....	1.00 .....	.95 1.00	.90 1.03
February 2.....	1.08 .....	1.06 .....	.98 1.00	.95 1.00	.90 1.00
March 3.....	1.11 1.14	1.10 .....	1.05 .....	1.04 1.06	1.04 1.08
April 4.....	1.12 1.13	1.11 1.12	1.04 1.05	1.09 .....	1.04 1.08
May 2.....	1.10 .....	1.08 .....	1.03 .....	1.09 1.10	1.04 1.08
June 6.....	1.10 .....	1.08 .....	1.04 .....	1.12 .....	1.10 1.13
July 4.....	1.12 .....	1.10 .....	.....	1.12 1.13	1.10 1.15
August 1.....	1.15 .....	1.13 .....	1.08 .....	1.08 1.10	1.12 1.15
September 5.....	1.03 .....	.....	.....	1.00 .....	1.00 1.02
October 3.....	1.15½ .....	1.14 .....	.....	1.10 1.15	1.10 1.17
November 14.....	1.24 .....	1.20 .....	.....	1.25 1.30	1.25 1.30
December 12.....	1.40 .....	.....	1.33 .....	1.33 1.40	1.35 1.42



TABLE II.—Continued.

Month and Day of Quotation.	Number One Hard.	Number One Northern.	Number Two Northern.	Red and Amber Winter.	White Winter.
1880.					
January 2.....	\$1.45 @	\$1.43 @	@	\$1.38 @ 1.45	\$1.40 @ 1.47
February 6.....	1.35			1.30 1.35	1.32 1.37
March 12.....	1.35 1.37		\$1.35	1.40 1.45	1.36 1.42
April 2.....	1.30			1.30 1.32	1.28 1.34
May 6.....	1.24	1.22		1.23	1.19 1.20
June 11.....	1.23	1.18			1.19 1.20
July 2.....	1.11				1.05
August 6.....	1.25			1.04	1.02 1.07
September 3.....	1.13			1.00 1.02	1.00 1.02
October 1.....	1.08	1.06		.98 1.02	.95 1.00
November 5.....	1.16½				1.06 1.12
December 3.....	1.25 1.27½				1.15
1881.					
January 1.....	1.24			1.07	1.08½
February 5.....	1.20				1.05 1.10
March 5.....	1.25			1.06 1.08	1.05 1.10
April 2.....	1.25			1.14 1.16	1.12 1.14
May 7.....	1.25 1.26				
June 4.....	1.23				
July 2.....	1.27			1.26	1.26
August 13.....	1.27			1.27 1.30	1.25 1.28
September 4.....	1.40½			1.38 1.39	1.37 1.38
October 1.....	1.62			1.52 1.56	1.48 1.52
November 5.....	1.48 1.49			1.42 1.45	1.40 1.42
December 3.....	1.50			1.36 1.38	1.34 1.36
1882.					
January 14.....	1.55			1.43	1.42
February 4.....	1.57			1.45	1.41½ 1.43
March 4.....	1.60			1.32	1.30
April 1.....	1.59			1.36 1.37	1.36 1.37
May 8.....	1.68			1.42 1.43	1.39 1.40
June 10.....	1.60			1.42	1.32
July 7.....	1.45			1.32	1.30
August 6.....	1.38			1.25	1.25
September 2.....				1.08 1.09	1.08 1.09
October 7.....	1.15 1.16			1.03	1.04 1.05
November 4.....	1.20½			1.03 1.04	1.03 1.04
December 2.....	1.17			1.00 1.03½	1.00 1.03½
1883.					
January 6.....	1.18	1.13		1.00 1.03	1.00 1.03
February 4.....	1.25			1.12 1.13	1.09 1.13
March 3.....	1.30			1.18 1.20	1.13 1.17
April 22.....	1.26 1.27 1.22 1.23	1.23		1.13	1.08
May 5.....	1.26 1.27 1.22 1.23	1.23		1.18	1.12
June 16.....	1.23	1.19		1.20	1.14
July 7.....	1.18½ 1.14½	1.15		1.12	1.06
August 4.....	1.21½			1.17 1.18	1.12 1.12½
September 1.....	1.28			1.15 1.19	1.13 1.17
October 6.....	1.15			1.10	1.09
November 3.....	1.11½	1.03		1.08 1.08½	1.08½
December 1.....	1.15 1.15½	1.09½ 1.10½		1.10 1.11	1.10 1.11
1884.					
January 5.....	1.15	1.10		1.09	1.09
February 2.....	1.11 1.12	1.09		1.07	1.07
March 1.....	1.13¾	1.10		1.08	1.08
April 5.....	1.09½	1.04½		1.01	1.01
May 3.....	1.15	1.10		1.09	1.09
June 7.....	1.04½	1.00		1.03 1.05	1.07 1.07½
July 5.....	1.00	.95		.98	1.02 1.02½
August 16.....	.94	.89		.86	.92
September 6.....	.90	.86		.85 .86	.85 .88
October 11.....	.85½	.81½		.86 .88	.83 .84
November 1.....	.82½	.79		.82 .83	.80 .81
December 6.....	.81½	.76½		.80½	.80½
1885.					
January 3.....	.90	.82 .87	.80	.85 .85½	.85
February 7.....	.94	.94		.91	.92
March 7.....	.93	.90	.88	.89	.90
April 4.....	.93½	.90 .91	.88	.90	.91½
May 2.....	1.09	1.06½		1.08	1.10
June 6.....	.98	.95½ .96		1.01½	1.01½
July 4.....	.98½ .99	.97		1.01	1.00
August 8.....	.95½ .96	.92¾ .94		.99 1.00	
September 5.....	.87½ .88	.85 .85½		.91	.87½
October 3.....	.98 1.00			.95	.94
November 7.....	1.02 1.03	.98		.98	.96
December 5.....	1.00 1.01	.97		.97	.97

TABLE II.—Continued.

Month and Day of Quotation.	Number One Hard.	Number One Northern.	Number Two Northern.	Red and Amber Winter.	White Winter.
1886.					
January 2.....	\$1.01 @	\$ .98 @	\$ .98 @	\$ .94 @	\$ .94 @
February 6.....	.97½	.93½	.94	.92	.93½
March 6.....	.97¼	.94¾		.94½	.94½
April 3.....	.93	.90		.92	.91
May 1.....	.89¾	.86¾		.88½	.88
June 5.....	.87¾	.85¼		.85½	.84½
July 3.....	.85¾	.83¾		.84	.84½
August 7.....	.85½	.84		.81½	.81
September 4.....	.86½	.84¾		.84	.82
October 2.....	.83¾	.81¾		.80	.79½
November 7.....	.83	.81½	.84	.80½	.79
December 4.....	.91¾	.89¾		.85½	.84½
1887.					
January 7.....	.92	.90¾		.89	.88
February 5.....	.91¼	.90¼		.88¼	.88½
March 5.....	.90¾	.89¾		.86¼	.86¾
April 2.....	.89½	.87½		.87½	.87¼
May 7.....	.91½	.90½		.92¼	.92
June 4.....	.91¾	.90¾		.94½	.94
July 2.....	.83	.81¾		.84	.85
August 6.....	.80½	.78½		.82	.85
September 3.....	.81¾	.79		.78½	.83¼
October 1.....	.83½	.84		.79½	.80½
November 5.....	.84¼	.84	.84	.80¾	.83½
December 3.....	.90	.86		.85½	.89
1888.					
January 7.....	.91	.88½		.90	.92½
February 4.....	.91½	.89½		.87¾	.89
March 10.....	.90¾	.88¾		.88½	.91½
April 7.....	.91	.86¾		.88	.90
May 5.....	.97	.91½		.93	.95½
June 2.....	.91¼			.92¾	.95
July 7.....	.88¾	.86¾		.92½	.95½
August 4.....	.95	.92½		.91	.92
September 1.....	1.03½			.99	.99½
October 6.....	1.38	1.28¾		1.19	1.22
November 3.....	1.47½			1.11¾	1.14½
December 1.....	1.34½	1.42¾	1.27½	1.09½	1.08½
1889.					
January 5.....	1.28¾	1.36¾	1.20¾	1.04½	1.05
February 2.....	1.20¾	1.29¾	1.12¾	1.02¾	1.04½
March 2.....	1.30¼	1.37¼	1.19¾	1.06¾	1.07¾
April 6.....	1.20¾	1.30¾	1.02¼	.95½	1.01
May 4.....	1.05	1.22½	1.00	.88	.92
June 1.....	1.02½	1.20	.98	.87	.88
July 6.....	1.06½	1.25½	1.00	.90½	.95
August 3.....	1.00	1.20¾	.95	.82	.92
September 7.....	.90	.95	.88	.83	.86
October 7.....	.90¾	.86¾		.87	.91
November 2.....	.89¾	.85		.83	.83½
December 7.....	.90½	.86½	.84	.85	.85½
1890.					
January 4.....	.91½	.89	.85½	.85	.78
February 1.....	.90	.87	.84	.82½	.83
March 1.....	.89¼	.89¾	.84¼	.82	.82½
April 5.....	.92½	.93	.91½	.85½	
May 3.....	.98	.96		.97	.94½
June 6.....	.98½	.96½	.94½	.95	.94
July 4.....	.96	.95	.92½	.91¾	.92
August 1.....	1.01	1.00	.97	.94	.95
September 5.....	1.15	1.12	1.10	1.01	.99
October 3.....	1.07½	1.01½	1.06½	1.02¾	1.02
November 7.....	1.09¾	1.04¾	.98¾	1.03½	.98
December 1.....	1.12	1.03¾	.98	.90¾	.98¼
1891.					
January 5.....	1.66½	1.07	1.01	1.00	.98½
February 2.....	1.16	1.12	1.13	1.06	1.04½
March 2.....	1.14	1.10½		1.05	1.04
April 1.....	1.22	1.23	1.20	1.10½	1.09
May 2.....	1.40	1.25		1.11	1.17
June.....	1.12¾	1.04¾		.95	1.13
July.....	1.05½	1.01½	.99	1.05½	1.06
August.....	1.05½	1.02¾	.98½	.93½	1.10
September.....	1.15¾	1.16½	1.12½	1.04	1.03½
October.....	1.02½	1.01	.97		1.02
November.....		1.01½	1.02	1.00	.99
December.....	1.03½	1.02	1.02¾	1.01	1.01½

TABLE III.

The Price at Buffalo, N. Y., 1871-1891, of Minnesota Spring and Number One Hard Wheat Compared with those of Red and Amber Winter Wheat.

Month and Day of Comparison.	Excess in Prices of Minnesota Spring over Red and Amber.		Month and Day of Comparison.	Excess in Prices of Minnesota Spring over Red and Amber.		Month and Day of Comparison.	Excess in Prices of Minnesota Hard over Red and Amber.	
1871.			1874.			1877.		
January 7.....	@		January 3.....	@		January 6.....	12 @	7
February 4.....			February 7.....			February 3.....	15	13
March 11.....			March 7.....			March 3.....		20
April 1.....			April 4.....			April 7.....		
May 5.....			May 2.....			May 19.....		
June 3.....			June 6.....	-12	-17	June 2.....		
July 15.....	- 6	- 7	July 3.....	- 2	- 7	July 14.....		
August 19.....			August 1.....			August 4.....		
September 23.....			September 5.....			September 1.....	- 1	- 6
October 7.....			October 3.....			October 6.....	- 5½	- 8
November 18.....	- 7		November 7.....			November 3.....	- 7	-11
December 16.....	-14	-15	December 5.....			December 1.....	- 5	- 9
				Excess in Prices of Minnesota Hard over Red and Amber.				
1872.			1875.			1878.		
January 5.....	-12	-16	January 3.....	6 @	- 1	January 5.....	- 5	- 8
February 3.....	-10	-13	February 13.....	3	- 3	February 2.....	3	- 1
March 2.....			March 6.....	3	- 4	March 3.....		
April 6.....			April 3.....	3		April 6.....		
May 11.....	-15	-20	May 1.....			May 10.....		
June 8.....			June 12.....			June 16.....		
July 6.....			July 10.....		-13	July 7.....		
August 3.....			August 14.....		- 5	August 4.....	20	15
September 6.....			September 4.....			September 14.....	17	12
October 5.....		-10	October 2.....	3		October 5.....	18	13
November 2.....	-13	- 7	November 6.....		- 5	November 9.....	17	
December 7.....			December 18.....		- 5	December 1.....	17	12
1873.			1876.			1879.		
January 6.....	-20		January 3.....	10	4	January 5.....	15	10
February 1.....	-16		February 5.....	2	7	February 2.....	13	8
March 1.....	-10		March 4.....	4		March 3.....	7	8
April 5.....	- 7	-12	April 1.....	2	4	April 4.....	3	4
May.....			May 6.....			May 2.....	1	
June 7.....			June 3.....	2		June 6.....		- 2
July 4.....	-13	-26	July 1.....		- 1	July 4.....		- 1
August 2.....	-17	-16	August 5.....	9	7	August 1.....	7	5
September 6.....			September 2.....	16	7	September 5.....	3	
October 4.....			October 7.....	22	11	October 3.....	5½	½
November 8.....	-12	-22	November 18.....	10	6	November 14.....		
December 6.....			December 2.....	10	6	December 12.....		



TABLE III.—Continued.

Month and Day of Comparison.	Excess in Prices of Minnesota Hard over Red and Amber.	Month and Day of Comparison.	Excess in Prices of Minnesota Hard over Red and Amber.	Month and Day of Comparison.	Excess in Prices of Minnesota Hard over Red and Amber.
1880		1884		1888	
January 2....	7 @ .....	January 5....	6 @ .....	January 7....	1 @ — 1½
February 6....	5 .....	February 2....	4 ½ 5 .....	February 4....	3¾ 2½
March 12.....	— 5 — 8 .....	March 1.....	5¾ .....	March 10.....	2½ — ¾
April 2.....	— 2 .....	April 5.....	8½ .....	April 7.....	3 .....
May 6.....	1 .....	May 3.....	6 .....	May 5.....	4 2
June 11.....	.....	June 7.....	1½ .....	June 2.....	— 1½ — 3¾
July 2.....	.....	July 5.....	2 .....	July 7.....	— 4¾
August 6.....	21 .....	August 16....	8 7 .....	August 4.....	4 3
September 3....	13 11 .....	September 6....	4 5 .....	September 1....	3½ 3
October 1.....	10 6 .....	October 11....	.....	October 6.....	19 18½
November 5....	.....	November 1....	½ .....	November 3....	35¾ 32%
December 3....	.....	December 6....	1 .....	December 1....	25¾ 33%
1881		1885		1889	
January 1....	7 .....	January 3....	4½ 5 .....	January 5....	24¾ 31%
February 5....	.....	February 7....	3 .....	February 2....	18½ 27
March 5.....	19 17 .....	March 7.....	3 4 .....	March 2.....	23½ 28½
April 2.....	11 9 .....	April 4.....	3½ .....	April 6.....	22¾ 32¾
May 7.....	.....	May 2.....	1 .....	May 4.....	17 30½
June 4.....	.....	June 6.....	..... — 3½	June 1.....	15½ 22
July 2.....	1 .....	July 4.....	2½ 2 .....	July 6.....	16 30½
August 13....	— 3 .....	August 8.....	— 3½ — 4 .....	August 3.....	18 28¾
September 4....	2½ ½ .....	September 5....	— 3½ — 3 .....	September 7....	7 9
October 1.....	24 20 .....	October 3.....	3 5 .....	October 7.....	3¾ .....
November 5....	4 6 .....	November 7....	4 5 .....	November 2....	6½ 6
December 3....	14 12 .....	December 5....	3 4 .....	December 7....	5½ 5
1882		1886		1890	
January 14....	12 .....	January 2....	7 .....	January 4....	6½ .....
February 4....	12 .....	February 6....	5½ 4½ .....	February 1....	7½ 7
March 4.....	28 .....	March 6.....	2¾ .....	March 1.....	7¾ .....
April 1.....	23 22 .....	April 3.....	1 .....	April 5.....	7 7½
May 8.....	26 25 .....	May 1.....	¾ ¾ .....	May 3.....	1 .....
June 10.....	18 .....	June 5.....	2½ .....	June 6.....	3½ .....
July 7.....	13 .....	July 3.....	1¾ .....	July 4.....	4½ 4
August 6.....	13 .....	August 7.....	4 3 .....	August 1.....	6 7
September 2....	.....	September 4....	2½ .....	September 5....	14 .....
October 7.....	12 13 .....	October 2.....	3½ .....	October 3.....	4¾ .....
November 4....	17½ 16½ .....	November 7....	5 .....	November 7....	6¼ .....
December 2....	17 13½ .....	December 4....	5% .....	December 1....	12¼ .....
1883		1887		1891	
January 6.....	18 15 .....	January 7....	3 .....	January 5....	6½ 7
February 4....	13 12 .....	February 5....	3 2¾ .....	February 2....	10 .....
March 3.....	12 10 .....	March 5.....	4½ .....	March 2.....	9 .....
April 22.....	13 14 .....	April 2.....	3 .....	April .....	11½ 12½
May 5.....	8 9 .....	May 7.....	— ¾ .....	May .....	29 .....
June 16.....	3 .....	June 4.....	— 2¾ .....	June .....	.....
July 7.....	6½ .....	July 2.....	— 1 — ¾ .....	July .....	½ .....
August 4.....	4½ 3½ .....	August 6.....	— 1½ .....	August .....	11¾ .....
September 1....	13 9 .....	September 3....	3¼ .....	September ..	11¼ 11¼
October 6.....	5 .....	October 1.....	4 6 .....	October .....	5¼ .....
November 3....	3½ 3 .....	November 5....	3½ 6½ .....	November .....	.....
December 1....	5½ 4½ .....	December 3....	4½ 4½ .....	December ..	2¼ 2½

TABLE IV.

The Prices at Buffalo, N. Y., 1871-1891, of Minnesota Spring and Minnesota Number One Hard Wheat Compared with those of White Winter Wheat.

Month and Day of Comparison.	Excess in Prices of Minn. Spring over White.		Month and Day of Comparison.	Excess in Prices of Minn. Spring over White.		Month and Day of Comparison.	Excess in Prices of Minn. Hard over White.	
1871.			1874.			1877.		
January 7.....	@	.....	January 3.....	@	.....	January 6.....	9 @	.....
February 4.....		.....	February 7.....		.....	February 3.....	12	- 2
March 11.....		.....	March 7.....		.....	March 3.....	10	.....
April 1.....		.....	April 4.....		.....	April 7.....	.....	.....
May 5.....		.....	May 2.....		.....	May 19.....	-15	-30
June 3.....		.....	June 6.....	-17	-37	June 2.....	10	.....
July 15.....	-17	-27	July 3.....	-10	-30	July 14.....	.....	.....
August 19.....		.....	August 1.....		.....	August 4.....	.....	.....
September 23.....		.....	September 5.....		.....	September 1.....	- 4	- 9
October 7.....		.....	October 3.....		.....	October 6.....	-13½	-18
November 18.....	- 7	-17	November 7.....		.....	November 3.....	-10	-15
December 16.....	-24	-25	December 5.....	- 8	-13	December 1.....	- 8	-13
1872.			1875.			1878.		
January 5.....	-27	-25	January 3.....	- 2	- 7	January 5.....	- 6	-11
February 3.....	-25	-23	February 13.....	- 5	- 9	February 2.....	1	4
March 2.....	-15	-25	March 6.....	- 5	-10	March 2.....	1	3
April 6.....	-16	-25	April 3.....	- 2	-10	April 6.....	- 6	-12
May 11.....	-30	-40	May 1.....	-15	-18	May 10.....	- 9	-16
June 8.....	-42½	-50	June 12.....	-15½	-17	June 16.....	-11	-15
July 6.....		.....	July 10.....		-18	July 7.....	.....	- 7
August 3.....		.....	August 14.....	-11	-20	August 4.....	.....	-15
September 6.....		.....	September 4.....		.....	September 14.....	12	1
October 5.....	-35	-36	October 2.....		- 7	October 5.....	13	3
November 2.....	-25	-33	November 6.....	- 5	-10	November 9.....	18	12
December 7.....		.....	December 18.....	- 4	- 8	December 1.....	19	13
					Excess in Prices of Minn. Hard over White Winter.			
1873.			1876.			1879.		
January 6.....	-35	-40	January 3.....	3	1	January 5.....	20	7
February 1.....	-21	-41	February 5.....	5	.....	February 2.....	18	8
March 1.....	-10	-35	March 4.....	7	- 2	March 3.....	7	6
April 5.....	- 7	-32	April 1.....	6	- 2	April 4.....	8	5
May.....		.....	May 6.....	7	.....	May 2.....	6	2
June 7.....		.....	June 3.....	3	- 9	June 6.....	.....	- 3
July 4.....	-29	-40½	July 1.....		- 1	July 4.....	2	- 3
August 2.....	-32	-46	August 5.....	- 6	-16	August 1.....	3	.....
September 6.....		.....	September 2.....	6	- 8	September 5.....	3	1
October 4.....		.....	October 7.....	15	.....	October 3.....	5½	-1½
November 8.....	-32	-42	November 18.....	3	- 2	November 14.....	- 1	- 6
December 6.....		.....	December 2.....	3	- 2	December 12.....	5	- 2

TABLE IV.—Continued.

Month and Day of Comparison.	Excess in Prices of Minn. Hard over White.	Month and Day of Comparison.	Excess in Prices of Minn. Hard over White.	Month and Day of Comparison.	Excess in Prices of Minn. Hard over White.
1880.		1884.		1888.	
January 2....	5 @ - 2	January 5....	6 @ .....	January 7....	..... @ - 1¾
February 6....	3 - 2	February 2..	4 5	February 4..	2½ 2
March 12.....	- 1 - 5	March 1.....	5¾ .....	March 10.....	..... - 1¾
April 2.....	2 - 4	April 5....	8½ .....	April 7.....	1 .....
May 6.....	5 4	May 3.....	6 .....	May 5.....	1½ .....
June 11.....	4 3	June 7.....	- 2½ - 3	June 2.....	..... - 8¾
July 2.....	6 .....	July 5.....	- 2 - 2½	July 7.....	..... - 7½
August 6.....	22 18	August 16....	2 .....	August 4.....	..... ½ .....
September 3...	13 11	September 6..	5 2	September 1..	..... .....
October 1.....	13 8	October 11....	2½ 1½	October 6.....	..... .....
November 5....	10½ 4½	November 1..	2½ 1½	November 3...	..... .....
December 3....	10 12½	December 6..	1 .....	December 1..	..... .....
1881.		1885.		1889.	
January 1....	15½ .....	January 3....	5 .....	January 5....	21¾ 28%
February 5....	15 10	February 7..	2 .....	February 2..	16¾ 22¾
March 5.....	20 15	March 7.....	3 2	March 2.....	22½ 29½
April 2.....	13 11	April 4.....	2 .....	April 6.....	19¾ 29¾
May 7.....	.....	May 2.....	- 1 .....	May 4.....	5 22½
June 4.....	.....	June 6.....	..... - 3½	June 1.....	16½ 26
July 2.....	1 .....	July 4.....	- 1½ - 1	July 6.....	18½ 28½
August 13....	2 - 1	August 8.....	.....	August 3....	12½ 22¾
September 4...	3½ 2½	September 5..	½ .....	September 7..	4 .....
October 1.....	12 10	October 3....	4 6	October 7.....	..... - ¼
November 5....	8 7	November 7..	6 7	November 2...	..... .....
December 3....	16 14	December 5..	3 4	December 7..	..... .....
1882.		1886.		1890.	
January 14....	13 .....	January 2....	7 .....	January 4....	13½ 7½
February 4....	15½ 14	February 6..	4¼ 3½	February 1..	12 9
March 4.....	30 .....	March 6.....	2¾ .....	March 1.....	11¼ 14¾
April 1.....	23 22	April 3.....	2 .....	April 5.....	3½ .....
May 8.....	29 28	May 1.....	1¾ .....	May 3.....	4½ 2½
June 10.....	28 .....	June 5.....	3¼ .....	June 6.....	3 .....
July 7.....	15 .....	July 3.....	1¾ .....	July 4.....	11 .....
August 6.....	13 .....	August 7.....	4½ - ½	August 1.....	16 .....
September 2...	.....	September 4..	4½ 2¾	September 5..	5½ .....
October 7.....	11 11	October 2....	3¾ 3¾	October 3....	11¾ 8½
November 4....	17½ 16½	November 7..	6½ .....	November 7..	13 .....
December 2....	17 13½	December 4..	6¾ 6¾	December 1..	13¾ .....
1883.		1887.		1891.	
January 6....	18 15	January 7....	4 .....	January 5....	8 7
February 4....	16 12	February 5..	3 3¼	February 2..	11½ .....
March 3.....	17 13	March 5....	4 .....	March 2.....	10 .....
April 22.....	18 19	April 2.....	2¼ .....	April 1....	13 14
May 5.....	14 15	May 7.....	..... - ½	May 2.....	23 .....
June 16.....	9 .....	June 4.....	..... - 2¼	June .....	..... - ½
July 7.....	12½ .....	July 2.....	2 .....	July .....	..... - 2½
August 4.....	9½ 9	August 6.....	..... - 4½	August .....	..... - 4¾
September 1...	15 11	September 3..	..... - 1½	September ..	12¾ 12¼
October 6.....	6 .....	October 1....	3 5½	October .....	¾ .....
November 3...	3 .....	November 5..	¾ 4½	November....	..... .....
December 1....	5 4½	December 3..	..... .....	December ...	3½ .....



TABLE V.

Prices of Winter and Spring Wheat Flour at Chicago, Ill., from 1860 to 1891.

Month and year.	White Winter.		Red Winter.		Winter Superfine.		Spring.		Spring Superfine.	
1860.										
January.....	@		@		@		\$4.65 @ 4.80		@	
February.....							4.50 4.95			
March.....							4.85 5.10			
April.....							4.70 5.00			
May.....							5.25 5.50			
June.....							4.90 5.25			
July.....		\$6.00		\$5.00			4.80 5.00			
August.....		5.75	4.75	5.00			4.80 5.05	\$3.50	4.00	
September.....							4.60 5.00			
October.....							4.50 4.75			
November.....							4.20 4.50			
December.....							3.85 4.00			
1861.										
January.....	5.25	5.75	4.25	5.00			2.75 4.40			
February.....	5.25	5.75	4.25	5.00			2.75 4.30			
March.....	5.25	5.75	4.25	5.00			2.75 4.20			
April.....	5.25	5.75	4.25	5.00			2.75 4.40			
May.....	5.75	6.25	4.70	5.50			3.50 5.00			
June.....	5.00	6.00	4.25	5.00			3.00 4.15			
July.....	5.50	6.50	4.25	5.00			1.50 3.50			
August.....	5.50	6.50	4.25	5.00			1.50 4.00			
September.....	4.50	4.75	3.75	4.90			2.25 3.90			
October.....	4.50	5.00	4.00	4.25			2.50 4.25			
November.....	4.75	5.00	4.25	4.50			2.50 4.15			
December.....	4.40	4.60	3.75	4.10			2.25 3.75			
1862.										
January.....							2.60 4.00			
February.....	4.25	4.50	3.75	4.00			2.50 3.70			
March.....	4.30	4.90	4.25	4.70			2.50 4.00			
April.....	4.50	5.00	4.25	4.70			3.60 4.25			
May.....	5.00	5.25					3.25 4.25			
June.....	4.50	5.25	4.37	4.62½			2.50 4.25			
July.....		5.25					2.90 4.00			
August.....			4.75	5.75			2.75 4.75			
September.....			5.00	5.65			3.00 4.70			
October.....			4.85	5.70			3.00 4.75			
November.....	5.50	6.00	4.90	5.50			3.75 5.20			
December.....	5.50	6.25	4.90	5.50			3.50 5.00			
1863.										
January.....	5.50	6.25	5.00	5.50	4.00	4.25	4.00 5.00	3.00	3.75	
February.....	6.50	7.25	6.00	6.45	4.00	5.25	5.25 6.25	3.50	4.25	
March.....	7.25	8.50	6.50	7.00	4.50	5.25	5.75 6.50	3.25	4.50	
April.....	7.00	8.00	6.00	6.50	4.25	5.00	5.25 6.50	3.00	4.60	
May.....	6.50	7.25	6.00	6.25	4.00	5.00	4.50 5.75	3.00	4.00	
June.....	5.75	6.75	5.00	5.50	4.00	4.50	4.15 5.50	3.00	3.75	
July.....	6.00	7.00	5.00	5.50	3.50	4.50	4.00 5.25	2.75	3.50	
August.....	6.00	6.75	5.00	5.50	3.50	4.00	4.00 5.25	2.50	3.50	
September.....	6.00	7.50	5.25	5.75	4.00	4.25	4.25 5.25	3.50	4.10	
October.....	6.50	8.75	5.75	6.10	5.00	5.25	5.00 6.25	4.00	4.50	
November.....	6.00	7.50	5.40	5.75	4.00	4.50	4.40 5.75	3.50	4.25	
December.....	6.25	7.50	5.75	6.00	4.25	4.50	5.00 5.75	3.75	4.00	
1864.										
January.....	6.25	7.50	5.50	5.75	4.25	4.50	4.50 5.50	3.75	4.00	
February.....	7.00	8.25	6.00	6.50	4.50	4.75	5.00 5.75	3.60	4.60	
March.....	7.00	8.25	6.00	6.50	4.50	5.00	5.00 5.75	3.75	4.75	
April.....	7.50	8.00		6.25			5.25 5.50	4.60	4.85	
May.....	8.00	9.00	6.75	7.25	5.00	5.25	5.75 6.00	5.00	5.25	
June.....	9.00	9.50					5.62½ 6.75		5.30	
July.....	11.00	11.75	9.50	10.00			9.37½ 10.00		8.25	
August.....	10.50	11.25	9.50	9.75	8.00	8.50	8.50 9.75	7.25	8.00	
September.....	12.00	12.37½					10.50 10.60			
October.....	9.00	10.25	7.75	8.00			7.00 8.00	6.25	6.75	
November.....	11.00	11.50				7.50	8.75 9.50			
December.....	10.00	11.25	9.25	9.50	7.00	7.50	8.25 9.25	6.50	7.25	

TABLE V.—*Continued.*

Month and year.	White Winter.	Red Winter.	Fancy Brands Spring Extra.	Spring Extra.	Spring Superfine
1865.					
January.....	\$10.00 @ 11.00	\$8.75 @ 9.50	..... @ .....	\$8.00 @ 8.75	\$6.00 @ 6.50
February.....	9.50 10 50	8.00 8.25	..... @ .....	..... 7.75	..... 4.75
March.....	10.00 12.00	8.50 9.00	.....	6 87½ 8.00	6.00 6.50
April.....	8.00 9.50	.....	.....	5.00 6.00	..... 4.75
May.....	8.50 9.75	7.37½ 8.00	.....	5.75 6.75	4.50 5.25
June.....	8.00 10.37½	7.50 7.75	.....	5.80 7.25	4.50 5.25
July.....	7.00 9.50	7.00 7.25	.....	4.50 6.60	4.12½ 4.75
August.....	7.40 10.00	7.62½ 8.50	.....	6.00 7.31¼	5.00 5.75
September.....	8.75 13.00	8.75 10.00	.....	7.25 10.00	5.00 6.50
October.....	8.75 13.25	8.30 10.50	.....	7.25 9.75	5.00 7.00
November.....	10 00 13.25	..... 9.00	.....	7.00 8.12½	5.00 6.50
December.....	9.00 13.25	8 00 9.50	.....	6.75 8.00	4.44 7.30
1866.					
January.....	9.50 10 50	.....	.....	7.25 8.00	4.75 5.50
February.....	8.15 13.00	..... 9.50	.....	7.00 7.25	4.50 5.25
March.....	9.00 11 00	..... 7.00	.....	6.70 7.75	5.25 6.00
April.....	15.00 16.00	.....	7.75 8.25	7.12½ 7.75	4.00 4.50
May.....	15.00 16.00	.....	10.25 10.50	8.25 10.00	6 25 6.75
June.....	15.00 16.00	.....	11 25 11.75	9.75 11.00	5.00 8.50
July.....	15.00 17.00	.....	10 50 11.00	9.00 10.50	5.00 8.00
August.....	14.00 15.00	.....	9.50 10.50	6.75 9.50	4.00 6.00
September.....	13.50 15.00	.....	10 50 11.00	7.50 10.50	5.00 7.00
October.....	14.50 16.25	.....	11.50 12.00	9.00 11.00	6.00 9.25
November.....	14.50 16.25	.....	11.75 12.50	9.70 11.60	6.75 9.25
December.....	13.50 16.50	.....	11.50 11.75	9.00 10 50	5.50 8.50
1867.					
January.....	14.00 17.00	.....	12.25 12.75	11.50 11.75	8.00 9 25
February.....	14.00 17.00	.....	11.00 11.75	9.75 10.75	6.00 9.00
March.....	15.00 17.00	.....	11.25 12.50	9.75 11 25	6.50 8.25
April.....	15.75 17.50	14.00 14.50	13.00 13.75	11.00 12.75	8.00 10.25
May.....	16.00 18.50	14.75 15.50	14.50 15.00	12.50 14.00	8.50 11.50
June.....	15.50 18.00	14.50 15.00	13.75 14.25	11.50 13.00	6.50 10.00
July.....	14.00 16.75	12.00 15.00	12.00 13.00	9.50 11.50	6.00 8.75
August.....	12 25 15.00	11.00 12.00	10.50 11.00	9.00 10.25	6.00 8.00
September.....	10.50 12.50	9.50 11.00	9.50 10.00	7.75 8.50	4.75 7.00
October.....	11.00 13.50	9.75 11.50	9.50 10 50	8.25 9 25	6.00 7.75
November.....	11.50 14.00	10.00 12.00	10.50 11.00	9.00 10.25	6.25 8.50
December.....	11.25 13.75	9.50 11.00	9.25 9.75	7.50 8.75	5.00 7.00
1868.					
January.....	11.00 13.50	9.50 11.50	9.50 10.25	7.75 9.25	5.25 7.25
February.....	11.75 14.00	10.25 11.75	10.50 11.00	8.50 9.75	5.75 7.75
March.....	11.75 14.00	10.25 12.00	10.00 10.75	8.50 9.50	6.00 7.75
*April.....	11.75 14.50	10.00 11.50	10.00 11.25	8.50 10.25	6.00 8.50
May.....	11.50 14.50	10 00 11.50	9.75 11.12½	8.00 10 00	6.00 8.50
June.....	11.50 14 00	10.00 11.00	9.75 10.50	8.00 9.25	5 25 7.25
July.....	11.00 13.50	9.25 11.00	9.75 10.75	8.00 9.50	5 00 7.25
August.....	10.50 13.50	9.25 11.00	9.50 11.50	7.75 9.50	5.00 7.25
September.....	10.00 12.50	8.50 11.00	8 25 9.50	7.00 8.40	4 00 7.00
October.....	8.00 12.00	8.00 9.50	7.25 9.00	5.90 7.75	3.50 5.60
November.....	8.00 11.50	7.50 9.00	7.00 8.50	5.90 7.00	3.50 5.00
December.....	8.00 10.75	7.25 8.50	7.50 8.50	6.00 7.25	4.00 5.20
1869.					
January.....	8.00 14.00	6.87½ 8.50	6.50 7.25	5.25 6.50	4.00 5.12½
February.....	7.75 14.00	6.75 8.25	6.25 6.90	5.00 6.25	4.00 5.00
March.....	7.25 13.50	7.00 7.75	6.25 6.90	5.00 6.25	4.00 5.00
April.....	7.00 12.00	5.85 7.50	6.00 6.75	4.75 6.00	4.15 4.75
May.....	7.00 12.00	6.25 7.75	6.00 6.80	4.70 6.00	3.75 4.50
June.....	7.25 12.00	6.00 7.50	6.00 6.75	4.75 6.00	4.00 4.75
July.....	7.00 11.25	5.75 7.50	6.30 7.00	5.00 6.25	4.00 4.50
August.....	7.50 11.00	6.25 7.75	7.00 8.00	5.75 7.00	5.00 5.50
September.....	6.75 10.00	6.00 7.50	6.75 7.50	5.25 6.75	4.50 5.40
October.....	6.00 10.00	5.50 7.00	6.25 6.75	4.75 6.25	4.00 4.50
November.....	6.00 9.50	5.25 6.25	5.50 6.37½	4.25 5.50	3.25 4.10
December.....	5.75 9.50	5.00 6.00	5.25 6.00	3.50 5.25	3.00 3.50

\* The prices for the last nine months for 1868, exhibit monthly fluctuations instead of weekly.

TABLE V—Continued.

Month and Year.	White Winter		Red Winter.		Choice Spring Extra.		Common to Good Spring Extra.		Spring Super-fine.	
1870.										
January.....	\$5 75 @	9.50	\$4.75 @	5.60	\$5.00 @	5.25	\$3.75 @	5.25	\$3.00 @	3.55
February.....	6 25	9.50	4.75	5.75	4.50	5.00	3.70	4.50	3.35	3.60
March.....	6 25	9.00	4.75	5.75	4.50	4.85	3.60	4.40	3.20	3.50
April.....	6.00	9.00	4.75	5 75	4.50	5.00	3.70	4.40	3.25	3.50
May.....	6.00	9.00	4.75	6.00	5.00	5.50	4.00	4 75	3.50	3.90
June.....	6.00	9.00	4.75	6.00	5.00	5.50	4.00	5.00	3.60	3.90
July.....	6.25	9.50	5.25	6.25	5.75	6.25	4.50	5.50	4.00	4.25
August.....	6.50	9.50	6.00	6.75	6 25	6.50	5.00	6.25	4.25	4.75
September.....	6.50	9.50	5.75	6 25	5.75	6.00	4 25	5.50	3.60	4.10
October.....	5.50	9.50	4.75	5.75	5.50	5.75	4.00	5.25	3.25	3.80
November.....	6.25	9.50	5.00	6.00	5.30	5.50	4.25	5.25	3.50	4.20
December.....	6.25	9.50	5.00	6.00	5.50	5.75	4.35	5.25	3.50	4.25
1871.										
January.....	6.50	7.50	5.00	6.00	5.50	6.00	4.60	5.30	3.30	4.25
February.....	7.00	8.00	5.50	6.75	6.50	7.00	5.50	6.25	4.00	5.20
March.....	7.00	8.25	5.50	6.75	6.70	7.20	5.50	6.50	4.25	5.25
April.....	7.25	8.50	6.50	7.00	6.75	7.25	5.75	6.50	4.25	5.15
May.....	7.25	8.50	6.50	7.00	6.25	6.75	5.50	6.00	4.00	5.00
June.....	7.25	8.50	6.50	7.00	6.40	6.75	5.50	6.25	4.25	5.25
July.....	6.75	8.25	6.25	6.75	6.25	6.75	5.00	6.10	3.75	4.50
August.....	6.25	8.00	5.50	6.25	5.75	6.70	4.50	5.50	3.25	4.25
September.....	6.00	7.75	5.50	6.25	5.75	6.50	5.00	5.50	3.50	4.50
October.....	6.50	8.00	5.75	6.25	6.10	6.75	5.25	5.90	4.00	5.00
November.....	7.00	8.25	6.25	7.00	6.25	7.20	5.40	6.20	4.25	5.00
December.....	7.25	8.25	6.00	6.75	6.25	6.75	5.25	6.00	3.50	4.75
			Fancy Minne-							
			sota Extras.							
1872.										
January.....	7.25	8.50	7.00 @	7.25	6.50	6.75	5.25	6.25	3.75	5.00
February.....	7.25	9.00	7.10	7.25	6.25	6.50	5.00	6.00	3 75	4.90
March.....	7.50	9.25	6.75	7.30	6.30	6.60	5.25	6.25	4.00	5.00
April.....	8.00	10.25	7.00	7.50	6.25	6.75	5.00	6.00	4.00	4.75
May.....	8.50	11.25	8.00	8.75	7.25	8.00	5.75	7.00	4.50	5.50
June.....	8.75	11.25	8.50	9.00	7.75	8.25	6.00	7.50	4.75	5.75
July.....	8.25	10.50	7.50	8.50	6.75	7.50	5.00	6.50	3.50	4.50
August.....	8.00	10.50	7.50	8.25	6.50	7.50	4.75	6.00	3.00	4.50
September.....	8.00	10.00	7.50	8.25	6.50	7.25	4.75	6.25	3.00	4.50
October.....	7.75	10.00	7.50	8.00	6.25	7.25	5.00	6.00	3.25	4.75
November.....	7.75	9.75	7.00	7.50	6.00	7.00	4.75	6.00	3.00	4.50
December.....	7.75	10.00	6.75	7.25	6.00	6.50	4.50	5.75	3.00	4.25
1873.										
January.....	7.75	10.00	7.00	8.00	6.10	6.50	5.00	6.00	3.30	4.50
February.....	8.50	10.50	7.25	8.25	6.50	7.00	5.50	6.25	3.75	5.00
March.....	8.25	10.50	7.25	8.25	6.50	7.00	5.50	6.25	3.75	5.00
April.....	7.75	10.00	7.00	8.00	6.25	6.75	5.00	6.00	3.25	4.50
May.....	7.50	10.00	6.75	7.75	6.00	6.50	4 50	5.75	3.20	4.25
June.....	8.00	10.25	7.25	7.75	6.25	6.75	5.25	6.00	3.25	4.50
July.....	7.75	9.50	6.50	7.00	5.75	6.25	4.75	5.50	2.80	4.00
August.....	7.50	9.00	6.50	7.50	6.00	6.50	5.00	6.00	3.00	4.25
September.....	7.25	9.25	7.00	7.50	6.25	6.95	5.40	6.10	3.50	5.00
October.....	7.00	8.50	6.50	6.75	5.75	6.25	4.75	5.60	3.00	4 50
November.....	6.75	8.50	6.25	7.00	5.40	5.90	4.40	5.25	2.80	4.00
December.....	7.50	9.25	6.50	7.50	5.75	6.30	4.75	5.60	3.00	4.25



TABLE V.—Continued.

Month and Year.	White Winter.		Fancy Minn. Extra.		Choice Spring Extra.		Common to Good Spring Extra.		Spring Superfine.	
1874.										
January .....	\$7.50	@ 9.25	\$6.50	@ 7.00	\$5.75	@ 6.25	\$5.00	@ 5.60	\$3.75	@ 4.50
February .....	8.00	9.37½	6.75	7.00	5.75	6.25	5.00	5.50	4.25	4.50
March .....	8.00	9.37½	6.75	7.00	5.80	6.25	5.00	5.50	4.00	4.50
April .....	7.75	9.25	6.50	7.00	5.75	6.25	5.00	5.50	4.25	4.75
May .....	7.75	9.00	6.75	7.00	5.90	6.50	5.35	5.75	4.25	5.00
June .....	7.50	8.75	6.50	7.00	5.50	6.25	5.10	5.40	4.00	4.75
July .....	6.50	8.00	6.75	7.00	5.40	6.25	5.00	5.25	4.00	4.75
August .....	6.50	8.00	7.00	7.50	5.40	6.00	5.00	5.25	4.00	4.75
September .....	6.00	7.00	6.50	7.50	5.20	5.50	4.75	5.00	3.75	4.25
October .....	6.00	7.00	6.25	6.50	5.00	5.50	4.60	4.80	3.75	4.25
November .....	5.50	6.75	5.25	5.50	4.75	5.40	4.10	4.50	3.25	3.75
December .....	5.25	6.50	5.25	5.50	4.75	5.25	4.10	4.50	3.25	3.75
1875.										
*January .....	5.25	6.50	5.25	5.50	4.75	5.25	4.10	4.50	3.25	3.75
February .....	5.25	6.00	4.80	5.25	4.35	4.75	3.75	4.25	2.75	3.50
March .....	5.25	6.00	4.80	5.25	4.25	4.75	3.75	4.25	2.75	3.50
April .....	5.25	6.00	5.25	5.75	4.60	5.00	4.00	4.50	2.85	3.50
May .....	6.00	7.00	5.50	6.00	4.75	5.25	4.40	4.60	3.25	4.20
June .....	6.50	7.25	5.25	5.90	4.60	5.00	4.35	4.50	3.25	4.20
July .....	6.50	7.25	5.50	6.00	4.75	5.25	4.25	4.65	3.25	4.00
August .....	7.00	8.00	7.00	7.25	5.75	6.50	5.00	5.50	4.00	4.75
September .....	7.00	8.00	6.60	7.00	5.75	6.50	5.00	5.50	3.65	4.50
October .....	6.75	7.75	6.50	7.00	5.75	6.50	4.75	5.50	3.50	4.50
November .....	6.50	7.50	6.25	7.00	5.25	6.00	4.60	5.00	3.65	4.25
December .....	6.50	7.50	6.00	6.50	5.20	5.75	4.50	4.90	3.60	4.25
Patent Spring.										
1876.										
January .....	6.25	7.25	6.25	7.00	.....	.....	4.00	6.00	3.25	3.75
February .....	6.25	7.25	6.25	8.00	.....	.....	4.00	6.00	3.25	3.75
March .....	6.50	7.50	6.25	8.00	.....	.....	4.25	6.00	3.25	4.00
April .....	7.00	8.25	6.50	8.50	.....	.....	4.60	6.50	4.00	4.50
May .....	7.00	8.00	7.00	9.00	.....	.....	5.25	7.00	4.40	5.00
June .....	6.75	7.50	6.75	8.00	.....	.....	4.75	6.50	4.00	4.50
July .....	6.50	7.25	6.25	7.75	.....	.....	4.75	6.20	3.75	4.50
August .....	5.75	7.00	5.75	7.50	.....	.....	4.00	6.00	3.25	3.75
September .....	6.00	7.25	6.25	7.50	.....	.....	4.25	6.25	3.50	4.00
October .....	6.25	7.50	6.40	8.00	.....	.....	5.00	6.60	4.00	4.75
November .....	6.50	7.50	6.75	7.75	.....	.....	5.00	6.50	4.20	4.55
December .....	6.50	7.75	6.75	8.00	.....	.....	5.25	6.75	4.25	4.75
Spring Wheat by Patent Process.										
Choice to Fancy Spring Wheat.										
1877.										
January .....	6.75	8.00	7.25	9.00	6.50	7.00	5.75	6.25	4.50	5.00
February .....	6.75	8.00	7.25	9.00	6.75	7.25	5.75	6.50	4.50	5.00
March .....	6.75	8.00	7.25	9.00	6.75	7.25	5.75	6.50	4.50	5.25
April .....	7.00	8.25	7.25	9.25	6.00	6.50	4.50	5.25	4.35	5.10
May .....	9.50	10.50	9.25	11.00	8.50	9.00	7.50	8.00	6.00	7.00
June .....	9.00	10.00	8.50	10.50	8.00	8.25	7.00	7.50	5.50	6.50
July .....	8.50	9.50	8.50	10.50	7.75	8.25	6.75	7.50	5.00	6.25
August .....	7.25	8.00	8.25	9.50	7.25	7.75	6.00	7.00	4.50	5.25
September .....	6.00	7.00	7.25	8.75	6.00	6.25	5.25	5.50	3.75	4.25
October .....	6.00	7.25	7.00	8.75	5.75	6.25	5.00	5.50	3.75	4.25
November .....	6.00	7.25	6.75	8.50	5.75	6.25	4.80	5.25	3.75	4.75
December .....	6.00	7.25	6.50	8.50	5.50	6.25	4.75	5.25	3.75	4.25

\*No quotation for Minnesota Patent Spring Wheat Flour is made by the month, in the year 1875, in the annual report of the Chicago Board of Trade. There is a footnote, however, to the prices for Minnesota Spring Extra, saying that during the year Minnesota "New" Process Flour had sold about \$2.00 a barrel above the price given in the report of other Minnesota flour.

TABLE V.—*Continued.*

Month and Year.	White Winter.	Spring Wheat by Patent Process.	Choice to Fancy Spring Wheat	Common to Good Spring Extra.	Spring Superfine.
1878.					
January .....	\$6.00 @ 7.00	\$6.25 @ 8.50	\$5.25 @ 6.00	\$4.75 @ 5.00	\$3.75 @ 4.25
February .....	5.75 6.50	6.00 8.50	5.25 6.00	4.60 5.00	3.25 3.75
March .....	5.75 6.50	6.25 8.80	5.25 6.25	4.75 5.00	3.25 3.75
April .....	5.75 7.00	6.50 8.75	5.50 6.50	4.75 5.25	3.25 3.75
May .....	5.75 6.75	6.50 8.75	5.40 6.35	4.80 5.25	3.25 3.75
June .....	5.25 6.00	6.00 8.50	5.25 6.00	4.50 5.10	3.00 3.50
July .....	5.25 6.00	5.75 8.25	5.25 5.75	4.30 5.00	3.00 3.60
August .....	4.75 5.50	5.75 8.25	5.25 6.00	4.25 5.25	3.00 3.75
September .....	4.25 5.25	5.75 8.25	5.00 6.50	4.20 5.00	3.00 3.75
October .....	4.25 5.50	5.75 8.00	4.80 5.75	3.75 4.50	2.80 3.50
November .....	4.25 5.00	5.50 8.00	4.75 5.50	3.60 4.50	2.50 3.20
December .....	4.25 5.00	5.50 8.00	4.25 5.25	3.50 4.25	2.40 3.00
1879.					
January .....	4.25 5.00	5.50 8.00	4.25 5.00	3.50 4.00	2.50 3.00
February .....	4.50 5.25	6.00 8.00	4.25 5.00	3.50 4.00	2.50 3.00
March .....	5.00 5.75	6.00 9.00	4.50 5.25	3.75 4.25	2.60 3.25
April .....	5.00 5.75	6.00 8.50	4.25 5.00	3.60 4.00	2.50 3.00
May .....	5.00 5.50	5.75 8.00	4.25 4.80	3.50 4.00	2.50 3.00
June .....	5.75 6.50	6.00 8.00	4.75 5.40	4.00 4.40	2.75 3.60
July .....	5.50 6.25	5.75 8.00	4.50 5.25	3.80 4.50	2.75 3.50
August .....	5.00 5.75	5.75 8.00	4.75 5.50	4.00 4.50	2.75 3.75
September .....	5.00 5.60	5.75 8.00	4.50 5.50	3.75 4.25	2.75 3.50
October .....	5.50 6.35	6.00 8.50	5.20 5.75	4.25 4.75	3.50 4.00
November .....	6.25 7.25	6.75 9.00	5.75 6.80	5.00 5.50	4.00 4.75
December .....	6.00 7.00	6.60 9.00	6.00 6.75	5.10 5.75	4.00 4.75
1880.					
January .....	6.25 7.25	6.50 8.75	6.00 6.75	5.25 6.00	4.00 5.00
February .....	6.00 7.00	6.00 8.25	5.75 6.50	5.00 5.50	3.75 4.75
March .....	6.00 7.00	6.00 8.00	5.75 6.50	5.00 5.50	3.75 4.75
April .....	5.75 6.50	6.00 8.00	5.75 6.25	5.00 5.50	3.75 4.75
May .....	5.50 6.25	6.00 8.00	5.50 6.25	5.00 5.25	3.75 4.50
June .....	5.25 6.00	5.75 8.00	5.25 6.00	4.75 5.00	3.50 4.50
July .....	5.00 5.50	5.75 7.75	5.00 5.75	4.00 4.75	3.00 3.75
August .....	5.00 5.75	6.00 7.75	5.00 6.00	4.25 5.00	3.10 3.75
September .....	5.00 5.75	5.75 7.75	5.25 6.00	4.25 5.00	3.00 3.75
October .....	5.00 5.75	5.75 7.75	5.25 6.00	4.25 5.00	3.00 3.75
November .....	5.25 6.00	6.00 7.75	5.40 6.25	4.50 5.10	3.00 3.75
December .....	5.25 6.25	6.25 7.75	5.40 6.50	4.30 5.25	3.25 4.00
1881.					
January .....	5.00 5.75	6.00 7.75	5.00 6.00	4.35 4.75	3.00 3.75
February .....	5.00 5.75	6.00 7.75	5.00 6.00	4.35 4.75	3.00 3.75
March .....	5.00 5.75	6.00 7.75	4.75 5.75	4.25 4.75	3.00 3.75
April .....	5.00 5.75	6.00 7.75	5.00 5.75	4.25 4.75	3.00 3.75
May .....	5.00 5.75	5.75 7.50	5.00 5.75	4.25 4.75	3.00 3.75
June .....	5.00 5.75	5.75 7.50	5.00 5.75	4.25 4.75	3.00 3.75
July .....	5.50 6.25	6.00 7.75	5.25 6.25	4.50 5.00	3.25 4.00
August .....	6.00 6.75	6.50 7.75	5.50 6.50	4.75 5.25	3.50 4.25
September .....	6.50 7.50	7.00 8.50	6.00 6.75	5.00 5.75	3.50 4.50
October .....	6.75 8.00	7.75 9.50	7.00 7.75	5.50 6.50	4.00 5.25
November .....	6.50 7.50	7.25 9.00	6.50 7.25	5.50 6.25	4.00 5.00
December .....	6.50 7.50	7.25 8.75	6.50 7.00	5.50 6.25	4.00 4.75
1882					
January .....	6.50 7.25	7.25 8.50	6.50 7.25	5.25 6.25	3.75 4.50
February .....	6.50 7.25	7.25 8.50	6.50 7.25	5.25 6.25	3.75 4.50
March .....	6.50 7.25	7.25 8.50	6.50 7.25	5.25 6.25	3.75 4.50
April .....	6.00 7.00	7.00 8.25	6.25 7.00	5.00 6.00	3.50 4.50
May .....	6.25 7.25	7.50 9.00	6.50 7.50	5.25 6.25	3.50 4.50
June .....	6.25 7.25	7.50 9.00	6.50 7.50	5.25 6.25	3.50 4.50
July .....	6.00 7.00	7.50 9.00	6.25 7.40	5.00 6.10	3.50 4.50
August .....	5.50 6.75	7.50 8.75	6.25 7.00	5.00 6.00	3.25 4.25
September .....	5.25 6.00	6.75 8.25	5.75 6.50	4.50 5.75	3.00 3.80
October .....	4.50 5.50	6.50 7.25	5.25 6.00	4.00 5.00	2.75 3.75
November .....	4.50 5.50	6.50 7.25	5.00 6.00	4.00 4.75	2.75 3.75
December .....	4.50 5.50	6.00 7.00	5.00 6.00	4.00 4.75	2.75 3.75

TABLE V.—Continued.

Month and Year.	White Winter.	Spring by Patent Process.	Minn. Bakers, Good to Choice.	Fair to Good Spring.	Low Grade.
1883.					
January.....	\$4.75 @ 5.60	\$6.00 @ 7.00	\$4.25 @ 4.50	\$5.00 @ 5.50	\$2.50 @ 3.50
February.....	4.75 6.00	6.00 7.25	4.25 4.50	5.00 5.50	2.50 3.50
March.....	5.00 6.00	6.00 7.50	4.25 4.50	5.00 5.50	2.50 3.50
April.....	5.00 6.00	6.25 7.50	4.25 4.50	5.00 5.50	2.50 3.50
May.....	5.00 6.00	6.50 7.50	4.25 4.75	5.00 5.75	2.50 3.75
June.....	5.00 6.25	6.50 7.50	4.25 4.75	5.00 5.75	2.50 3.75
July.....	5.00 6.00	6.25 7.00	4.00 4.75	5.00 5.50	2.25 3.50
August.....	5.00 6.00	6.00 7.00	4.00 4.75	5.00 5.50	2.25 3.50
September.....	4.75 6.00	6.00 7.00	4.00 4.75	5.00 5.50	2.25 3.50
October.....	5.00 5.75	6.00 7.00	4.00 4.75	5.00 5.75	2.25 3.50
November.....	5.00 5.75	6.00 7.00	4.00 4.75	4.75 5.75	2.25 3.50
December.....	5.00 5.75	6.00 6.75	4.00 4.60	4.60 5.45	2.25 3.50
1884.					
January.....	5.50 5.75	5.80 6.50	4.75 5.50	4.00 5.00	2.25 3.50
February.....	5.25 5.60	5.50 6.25	4.50 5.25	4.00 4.50	2.00 3.25
March.....	5.50 5.85	5.50 6.25	4.50 5.25	4.00 4.50	2.00 3.25
April.....	5.40 5.65	5.50 6.25	4.25 5.00	3.75 4.25	2.00 3.00
May.....	5.40 5.65	5.50 6.50	4.25 5.00	3.75 4.25	2.00 3.00
June.....	5.60 6.00	5.50 6.50	4.25 5.00	3.75 4.25	2.00 3.00
July.....	5.25 5.60	5.50 6.25	4.25 4.75	3.75 4.25	2.00 3.00
August.....	4.75 5.25	5.25 5.75	4.25 4.75	3.75 4.25	2.00 3.00
September.....	4.00 4.75	4.75 5.25	3.75 4.50	3.50 4.00	1.75 3.00
October.....	4.00 4.50	1.75 5.25	3.75 4.25	3.50 4.00	1.75 3.00
November.....	4.00 4.35	4.50 5.00	3.25 3.75	3.00 3.55	1.75 2.50
December.....	3.25 4.15	4.50 5.00	3.25 4.00	3.00 3.50	1.75 2.50
1885.					
January.....	3.85 4.30	4.25 5.00	3.00 3.75	3.00 3.50	2.00 2.50
February.....	4.00 4.75	4.37½ 5.25	3.25 3.75	3.25 3.75	1.80 2.75
March.....	4.00 4.40	4.50 5.25	3.25 3.75	3.25 3.75	1.80 2.75
April.....	3.75 4.40	4.50 5.25	3.30 4.00	3.00 3.75	1.75 2.50
May.....	4.75 5.30	5.00 6.00	3.60 4.50	3.50 4.25	2.00 3.00
June.....	5.00 5.50	5.00 6.00	3.60 4.50	3.50 4.25	2.25 3.25
July.....	4.85 5.25	5.00 5.65	3.45 4.25	3.35 4.00	2.25 3.00
August.....	4.85 5.25	4.75 5.50	3.45 4.20	3.35 4.00	2.25 3.00
September.....	4.50 5.00	4.50 5.25	3.45 4.15	3.35 4.00	2.25 3.00
October.....	4.70 4.90	4.75 5.65	4.00 4.25	3.75 4.50	1.90 3.25
November.....	4.60 5.00	4.90 5.50	3.75 4.25	3.75 4.50	1.90 3.25
December.....	4.60 5.00	4.90 5.50	4.00 4.25	3.75 4.50	1.90 3.25
1886.					
January.....	4.40 4.85	4.75 5.25	3.75 4.00	3.60 4.00	2.50 3.25
February.....	4.40 4.85	4.50 5.00	3.65 4.00	3.50 4.10	2.00 3.00
March.....	4.40 4.85	4.50 5.00	3.65 4.00	3.50 4.10	2.00 3.25
April.....	4.40 4.75	4.50 5.00	3.65 4.00	3.50 4.10	2.00 3.25
May.....	4.30 4.75	4.50 5.00	3.65 4.00	3.50 4.10	2.00 3.25
June.....	4.00 4.50	4.25 4.85	3.50 3.75	3.65 4.10	1.90 2.75
July.....	4.00 4.40	4.15 4.60	3.50 3.75	3.65 4.10	1.90 2.75
August.....	3.75 4.25	4.15 4.60	3.50 3.95	3.65 4.10	1.90 2.75
September.....	3.75 4.15	4.15 4.70	3.50 3.90	3.65 4.00	1.90 2.75
October.....	3.60 4.00	4.00 4.40	3.35 3.60	3.60 4.00	1.90 2.75
November.....	3.60 4.00	3.90 4.50	3.25 3.50	3.50 3.75	1.60 2.50
December.....	3.60 4.00	4.10 4.60	3.25 3.50	3.50 3.75	1.60 2.75
1887.					
January.....	3.75 4.60	4.25 4.70	3.50 3.75	3.50 3.75	1.60 2.25
February.....	3.75 4.50	4.25 4.70	3.50 3.75	3.50 3.75	1.60 2.25
March.....	3.75 4.35	4.10 4.60	3.50 3.75	3.50 3.75	1.60 2.25
April.....	3.75 4.50	4.15 4.60	3.50 3.75	3.50 3.75	1.60 2.25
May.....	3.65 4.50	4.15 4.60	3.50 3.75	3.50 3.75	1.60 2.25
June.....	3.75 4.60	4.20 4.75	3.60 3.85	3.60 3.85	1.60 2.25
July.....	3.65 4.20	4.00 4.40	3.45 3.60	3.60 3.85	1.65 2.25
August.....	3.60 4.20	4.00 4.35	3.45 3.60	3.60 3.85	1.65 2.25
September.....	3.60 4.20	4.10 4.50	3.55 3.75	3.60 3.85	1.75 2.25
October.....	3.50 4.00	4.00 4.50	3.55 3.75	3.50 3.75	1.70 2.25
November.....	3.50 4.00	4.00 4.50	3.55 3.75	3.50 3.75	1.70 2.25
December.....	3.50 4.00	4.00 4.50	3.55 3.75	3.50 3.75	1.70 2.25



TABLE V.—*Continued.*

Month and Year.	Winter Good to Choice.		Spring, by Pat. Process.		Minnesota Bakers.		Fair to Good Spring.		Low Grades.	
1888.										
January . . . . .	\$3.60	@ 4.10	\$4.00	@ 4.50	\$3.50	@ 3.75	\$3.25	@ 3.60	\$1.70	@ 2.50
February . . . . .	3.50	4.00	3.90	4.40	3.40	3.65	3.20	3.50	1.70	2.50
March . . . . .	3.40	3.90	3.85	4.35	3.30	3.55	3.20	3.50	1.70	2.50
April . . . . .	3.40	3.90	3.85	4.35	3.30	3.55	3.20	3.50	1.70	2.50
May . . . . .	3.25	3.75	3.75	4.45	3.25	3.50	3.25	3.60	1.70	2.50
June . . . . .	3.35	3.85	4.10	5.00	3.35	3.60	3.35	3.75	1.70	2.50
July . . . . .	3.35	3.85	4.15	4.80	3.35	3.60	3.35	3.75	1.70	2.50
August . . . . .	3.35	3.85	4.15	4.80	3.35	3.60	3.35	3.75	1.70	2.50
September . . . .	3.85	4.20	4.60	5.35	3.75	4.10	3.50	4.00	1.70	2.50
October . . . . .	5.00	6.00	6.00	7.00	4.60	5.50	4.25	5.00	2.00	3.00
November . . . .	5.50	6.00	6.40	7.10	4.50	5.50	4.50	5.00	2.00	2.90
December . . . .	4.90	5.75	6.10	6.75	4.25	5.00	4.25	4.75	1.85	2.50
	Winter, Pat. Process.		Choice to Good Winter.		Spring, by Pat. Process.					
1889.										
January . . . . .	5.00	5.50	4.50	5.00	6.00	6.50	4.50	5.50	1.70	2.75
February . . . . .	5.00	5.50	4.50	4.90	6.00	6.35	4.50	5.50	1.60	2.75
March . . . . .	5.00	5.50	4.65	5.10	6.15	6.65	4.50	5.65	1.50	2.75
April . . . . .	5.00	5.15	4.50	4.80	5.75	6.15	4.25	5.25	1.40	2.75
May . . . . .	4.75	4.90	4.25	4.40	5.00	5.75	4.00	4.75	1.30	2.50
June . . . . .	4.25	4.50	3.75	4.25	4.75	5.50	3.50	4.50	1.30	2.50
July . . . . .	4.35	4.75	4.10	4.50	5.00	5.75	3.50	4.75	1.30	2.75
August . . . . .	4.25	4.50	3.75	4.25	5.00	5.55	3.50	5.25	1.30	2.75
September . . . .	4.25	4.40	3.60	4.10	4.75	5.10	3.50	4.00	1.20	2.75
October . . . . .	4.25	4.40	3.75	4.10	4.50	5.00	3.50	4.25	1.25	2.75
November . . . .	4.15	4.35	3.65	4.05	4.40	4.90	3.45	4.15	1.25	2.75
December . . . .	4.15	4.35	3.70	4.00	4.25	4.90	3.45	4.15	1.25	2.25
			Spring, Pat. Process.		Minnesota Bakers.					
1890.										
January . . . . .	4.00	4.35	4.25	4.75	2.90	3.25	3.45	4.15	1.20	2.25
February . . . . .	4.00	4.30	4.25	4.75	2.85	3.25	3.45	4.15	1.10	2.25
March . . . . .	4.00	4.40	4.25	4.60	2.85	3.15	3.50	4.10	1.10	2.25
April . . . . .	4.00	4.40	4.25	4.60	2.90	3.20	3.50	4.10	1.10	2.25
May . . . . .	4.30	4.75	5.75	5.25	3.30	3.65	3.75	4.50	1.30	2.50
June . . . . .	4.75	5.20	4.75	5.25	3.30	3.65	3.75	4.50	1.40	2.50
July . . . . .	4.60	4.80	4.50	4.85	3.30	3.50	3.60	4.20	1.40	2.10
August . . . . .	4.60	5.00	4.70	5.10	3.50	3.75	3.60	4.30	1.70	2.50
September . . . .	5.10	5.50	5.25	5.75	3.75	4.00	4.50	5.00	1.80	2.50
October . . . . .	4.90	5.20	5.00	5.50	3.60	3.75	4.40	4.65	2.00	2.50
November . . . .	4.90	5.20	5.00	5.30	3.60	4.00	4.15	4.35	2.00	2.50
December . . . .	4.70	5.00	4.65	5.00	3.50	4.00	4.00	4.40	2.00	2.50
1891.										
January . . . . .	4.70	5.00	4.60	5.00	3.50	4.00	4.00	4.40	1.95	2.50
February . . . . .	4.70	5.00	4.60	4.90	3.50	3.75	4.00	4.30	1.95	2.75
March . . . . .	4.50	5.00	4.60	4.90	3.50	3.75	4.00	4.20	1.95	2.75
April . . . . .	4.80	5.10	4.85	5.10	3.90	4.10	4.20	4.40	2.10	2.75
May . . . . .	5.00	5.40	5.00	5.75	4.35	4.50	4.80	5.00	2.30	3.00
June . . . . .	5.00	5.25	5.00	5.75	4.10	4.25	4.80	5.00	2.30	3.00
July . . . . .	4.75	5.00	4.75	5.10	4.10	4.25	4.20	4.50	2.30	3.00
August . . . . .	4.30	4.50	4.75	5.10	4.00	4.10	4.20	4.30	2.30	3.00
September . . . .	4.60	5.00	5.00	5.30	4.10	4.40	4.40	4.60	2.50	3.50
October . . . . .	4.50	4.70	4.70	5.10	3.90	4.00	4.20	4.40	2.50	3.25
November . . . .	4.50	4.60	4.60	5.00	3.90	4.10	4.20	4.30	2.20	3.25
December . . . .	4.50	4.80	4.50	5.00	3.80	4.00	4.10	4.20	2.15	3.25

TABLE VI.

The Prices at Chicgo, Ill., from 1863 to 1891. of the best Flour manufactured from Winter Wheat compared with the same grade of Flour manufactured from Spring Wheat.

Month and Year.	Excess of Winter over Spring.		Month and Year.	Excess of Winter over Spring.		Month and Year.	Excess of Winter over Spring.		Month and Year.	Excess of Spring over Winter.	
1860.			1865.			1870.			1875.		
Jan...	@		Jan...	\$2.00 @	2.25	Jan...	\$ .75 @	4.25	Jan...	@-\$1.00	
Feb...			Feb...	1.75	2.75	Feb...	1.75	4.50	Feb...	— .45	— .75
Mar...			Mar...	3.13½	4.00	Mar...	1.75	4.15	Mar...	— .45	— .75
April...			April...	3.00	3.50	April...	1.50	4.00	April...	— .25	— .25
May...			May...	2.75	3.00	May...	1.00	3.50	May...	— .50	— 1.00
June...			June...	2.20	3 12½	June...	1.00	3.50	June...	— 1.25	— 1.35
July...	\$1.20	1.00	July...	2.50	2 90	July...	.50	3.25	July...	— 1.00	— 1.25
Aug...	1.15	.70	Aug...	1.40	2.6¾	Aug...	.25	3.00	Aug...	— .75	— .75
Sept...			Sept...	1.50	3.00	Sept...	.75	3.50	Sept...	— .40	— 1.00
Oct...			Oct...	1.50	3.50	Oct...	— .75	3.75	Oct...	— .25	— .75
Nov...			Nov...	3.00	5.12½	Nov...	.95	4.00	Nov...	— .25	— .50
Dec...			Dec...	2.25	5.25	Dec...	.75	3.75	Dec...	— .50	— 1.00
1861.			1866.			1871.			1876.		
Jan...	2.50	1.35	Jan...	2.25	2 50	Jan...	1.00	1.50	Jan...	— .25	— .25
Feb...	2.50	1.45	Feb...	1.15	5.75	Feb...	.50	1.00	Feb...	— .75	— .75
Mar...	2.50	1.55	Mar...	2.30	3.25	Mar...	.30	1.05	Mar...	— .25	— .50
April...	2.50	1.35	April...	7.25	7.75	April...	.50	1.25	April...	— .50	— .25
May...	2.25	1.25	May...	4.75	5.50	May...	1 00	1.75	May...	— .50	— 1.00
June...	2.00	1.85	June...	3.75	4.25	June...	.85	1.75	June...	— .50	— .50
July...	4.00	3.00	July...	4 50	6.00	July...	.50	1.55	July...	— .25	— .50
Aug...	4.00	2.50	Aug...	4.50	4.50	Aug...	.50	1.30	Aug...	— .50	— .50
Sept...	2.25	.85	Sept...	3.00	4.00	Sept...	.25	1.25	Sept...	— .25	— .25
Oct...	2.00	.75	Oct...	3.00	4.25	Oct...	.40	1.25	Oct...	— .15	— .50
Nov...	2.25	.85	Nov...	2.75	3 75	Nov...	.75	1.05	Nov...	— .25	— .25
Dec...	2.15	.85	Dec...	2.00	4.75	Dec...	1.00	1.50	Dec...	— .25	— .50
1862.			1867.			1872.			1877.		
Jan...	1.75	.80	Jan...	3.00	5.25	Jan...	.25	1.25	Jan...	.50	1.00
Feb...	1.80	.90	Feb...	3.75	4.50	Feb...	.75	1.95	Feb...	.50	1.00
Mar...	.90	.75	Mar...	2.75	3.75	Mar...	1.00	2.75	Mar...	.25	1.00
April...	1.75	1.00	April...	1.50	3.50	April...	.50	2.50	April...	— .25	— .50
May...	2.00	1.00	May...	1.75	3.75	May...	.25	2.25	May...	— .50	— .50
June...	2.35	1.25	June...	2.00	3.75	June...	.75	2.00	June...	— .50	— 1.00
July...			July...	1.75	4.00	July...	.50	2.25	July...	1.00	1.50
Aug...			Aug...	1.00	2.50	Aug...	.50	1.75	Aug...	1.25	1.75
Sept...			Sept...	1.50	3.00	Sept...	.25	2.00	Sept...	1.00	1.50
Oct...	1.75	.80	Oct...	1.00	3.00	Oct...	.75	2.25	Oct...	.75	1.25
Nov...	2.00	1.25	Nov...	2.00	4.00	Nov...	1.00	2.75	Nov...	.50	1.25
Dec...			Dec...			Dec...			Dec...		
1863.			1868.			1873.			1878.		
Jan...	1.50	1.25	Jan...	1.50	3.25	Jan...	.75	2.00	Jan...	.25	1.50
Feb...	1.25	1.00	Feb...	1.25	3.00	Feb...	1.25	2.25	Feb...	.25	2.00
Mar...	1.50	2.00	Mar...	1.75	3 25	Mar...	1.00	2.25	Mar...	.50	2.30
April...	1.75	1.50	April...			April...	.75	2.00	April...	.75	1.75
May...	2.00	1.50	May...			May...	.75	2.25	May...	.75	2.00
June...	1.60	1.25	June...			June...	.75	2.50	June...	.75	2.50
July...	2.00	1.75	July...			July...	1.25	2.50	July...	.50	2.25
Aug...	2.00	1.50	Aug...			Aug...	1.00	1.50	Aug...	1.00	2.75
Sept...	1.75	2.25	Sept...			Sept...	.25	1.75	Sept...	1.50	3.00
Oct...	1.50	2.50	Oct...			Oct...	.50	1.75	Oct...	1.50	2.50
Nov...	1 60	1.75	Nov...			Nov...	.50	1.50	Nov...	1.25	3.00
Dec...	1.25	1.75	Dec...			Dec...	1.00	1.75	Dec...	1.25	3.00
1864.			1869.			1874.			1879.		
Jan...	1.75	2.00	Jan...	1.50	6.75	Jan...	1.00	2.25	Jan...	1.25	3.00
Feb...	2.00	2.50	Feb...	1.50	7.10	Feb...	1.25	2.37½	Feb...	1.50	2.75
Mar...	2.00	2.50	Mar...	1.00	6.60	Mar...	1.25	2 37½	Mar...	1.00	3.25
April...	2.25	2.50	April...	1.00	5.25	April...	1.25	2.25	April...	1.00	2.75
May...	2.25	3.00	May...	1.00	5.20	May...	1.00	2.00	May...	.75	2.50
June...	3.37½	2.75	June...	1.25	5.25	June...	1.00	1.75	June...	.25	1.50
July...	1.62½	1.75	July...	.70	4.25	July...	— .25	1.00	July...	.25	1.75
Aug...	2.00	1.50	Aug...	.50	3.00	Aug...	— .50	.50	Aug...	.75	2.25
Sept...	1.50	4.77½	Sept...	— .25	2.50	Sept...	— .50	— .50	Sept...	.75	2.40
Oct...	2.00	2.25	Oct...	— .25	3.25	Oct...	— .25	.50	Oct...	.50	2.15
Nov...	2.25	2.00	Nov...	.50	3.12½	Nov...	.25	1.25	Nov...	.50	1.75
Dec...	1.75	2.00	Dec...	.50	3.50	Dec...	— .25	1.00	Dec...	.60	2.00

TABLE VI—Continued.

Month and Year.	Excess of Spring over Winter.	Month and Year.	Excess of Spring over Winter.	Month and Year.	Excess of Spring over Winter.	Month and Year.	Excess of Spring over Winter.
1880.		1883.		1886.		1889.	
Jan... \$ .25 @ 1.50		Jan... \$1.25 @ 1.40		Jan... \$ .35 @ .40		Jan... \$1.00 @ 1.00	
Feb... 1.25		Feb... 1.25 1.25		Feb... .10 .15		Feb... 1.00 .85	
Mar... 1.00		Mar... 1.00 1.50		Mar... .10 .15		Mar... 1.15 1.15	
April... .25 1.50		April... 1.25 1.50		April... .10 .25		April... .75 1.00	
May... .50 1.75		May... 1.50 1.50		May... .20 .25		May... .25 .85	
June... .50 2.00		June... 1.50 1.25		June... .25 .35		June... .50 1.00	
July... .75 2.25		July... 1.25 1.00		July... .15 .20		July... .65 1.00	
Aug... 1.00 2.00		Aug... 1.00 1.00		Aug... .40 .35		Aug... .75 1.05	
Sept... .75 2.00		Sept... 1.25 1.00		Sept... .40 .55		Sept... .50 .70	
Oct... .75 2.0		Oct... 1.00 1.25		Oct... .40 .40		Oct... .25 .60	
Nov... .75 1.75		Nov... 1.00 1.25		Nov... .30 .50		Nov... .25 .55	
Dec... 1.00 1.50		Dec... 1.00 1.00		Dec... .50 .60		Dec... .10 .55	
1881.		1884.		1887.		1890.	
Jan... 1.00 2.00		Jan... .30 .75		Jan... .50 .10		Jan... .25 .40	
Feb... 1.00 2.00		Feb... .25 .65		Feb... .50 .20		Feb... .25 .45	
March 1.00 2.00		March... .40		March... .35 .25		March... .25 .20	
April... 1.00 2.00		April... .10 .60		April... .40 .10		April... .25 .20	
May... .75 1.75		May... .10 .85		May... .50 .10		May... .45 .50	
June... .75 1.75		June... —10 .50		June... .45 .15		June... .05	
July... .50 1.50		July... .25 .65		July... .35 .20		July... —.10 .05	
Aug... .50 1.00		Aug... .50 .50		Aug... .40 .15		Aug... .10 .10	
Sept... .50 1.00		Sept... .75 .50		Sept... .50 .30		Sept... .15 .25	
Oct... 1.00 1.50		Oct... .75 .75		Oct... .50 .50		Oct... .10 .30	
Nov... .75 1.50		Nov... .50 .65		Nov... .50 .50		Nov... .10 .10	
Dec... .75 1.25		Dec... 1.25 .85		Dec... .50 .50		Dec... —.05 .05	
1882.		1885.		1888.		1891.	
Jan... .75 1.25		Jan... .40 .70		Jan... .40 .40		Jan... —.10 .05	
Feb... .75 1.25		Feb... .37½ .50		Feb... .40 .40		Feb... —.10 —.10	
March .75 1.25		March... .50 .85		March... .45 .45		March... .10 —.10	
April... 1.00 1.25		April... .75 .85		April... .45 .45		April... .05 .05	
May... 1.25 1.75		May... .25 .70		May... .50 .70		May... .35	
June... 1.25 1.75		June... .50		June... .75 1.15		June... .50	
July... 1.50 2.00		July... .15 .40		July... .80 .95		July... .10	
Aug... 2.00 2.00		Aug... —10 .25		Aug... .80 .95		Aug... .45 .60	
Sept... 1.50 2.25		Sept... .25 .25		Sept... .75 1.15		Sept... .40 .30	
Oct... 2.00 1.75		Oct... .05 .75		Oct... 1.00 1.00		Oct... .20 .40	
Nov... 2.00 1.75		Nov... .30 .50		Nov... .90 1.10		Nov... .10 .40	
Dec... 1.50 1.50		Dec... .30 .50		Dec... 1.20 1.00		Dec... .20	



TABLE VII.

Prices at Buffalo, N. Y., 1870-1891, of Flour manufactured in the West or Northwest, (compiled from the market reports of the Buffalo Daily Courier.)

Month and Day of Quotation.	New Process.	Spring.	Bakers.	Amber or Red Winter.	White Winter
1870.					
January 5.....	@	\$5.25 @ 5.50	\$6.00 @ 6.25	@	\$6.50 @ 7.50
February 1.....		5.25 5.50	6.00 6.25		6.50 7.30
March 1.....		5.00 5.25	5.88 6.12		6.50 7.00
April 2.....		5.00 5.25	5.88 6.12		6.50 7.00
May 2.....		5.00 5.25	5.75 6.00		6.50 7.00
June 1.....		5.25 5.75	5.75 6.25	6.00 6.50	6.50 7.25
July 2.....		6.00 6.50	6.50 7.00	6.75 7.00	7.50 8.00
August 1.....		7.00 7.25	7.25 7.50	7.50 7.75	8.00 8.50
September 1.....		6.50 7.00	7.25 7.50	7.25 7.50	7.50 8.25
October 1.....		5.50 6.00	6.50	6.50 6.75	6.75 7.50
November 1.....		5.50 6.00	6.25 6.50	6.25 6.50	7.00 7.50
December 1.....		5.75 6.00	6.25 6.50	6.75 7.00	7.00 7.50
1871.					
January 7.....		5.75 6.25	6.25 6.50	6.50 6.75	7.00 7.50
February 4.....		6.50 7.00	7.00 7.25	7.25 7.50	7.50 8.25
March 4.....		6.50 7.00	7.00 7.25	7.25 7.50	7.50 8.25
April 1.....		6.75 7.00	7.25 7.50	7.00 7.25	7.75 8.50
May 5.....		6.25 6.50	6.75 7.00	7.00	7.50 8.25
June 3.....		6.50 6.75	7.00 7.25	7.00 7.25	7.50 8.25
July 3.....		6.50 6.75	7.00	7.25 7.50	7.50 8.00
August 5.....		5.75 6.25	6.50 6.75	6.25 7.00	6.50 7.50
September 2.....		5.75 6.25	6.50 6.75	6.00 6.25	6.50 7.50
October 7.....		6.50 6.75	7.00 7.25	6.75 7.25	7.50 8.25
November 4.....		6.75 7.25	7.25 7.50	7.25 7.50	7.75 8.50
December 2.....		6.75 7.25	7.25 7.50	7.00 7.50	7.75 8.50
1872.					
January 5.....		6.75 7.25	7.25 7.50	7.00 7.50	7.50 8.25
February 3.....		6.75 7.25	7.25 7.50	7.00 7.50	7.50 8.25
March 2.....		7.00 7.50	7.50 7.75	7.25 7.75	7.75 8.50
April 6.....		6.75 7.25	7.25 7.50	7.25 7.50	7.75 8.50
May 4.....		7.25 7.50	7.50 8.00	7.50 8.00	8.25 9.25
June 4.....		8.25	9.00 9.25		10.25 10.75
July 6.....		7.25 7.75	8.00 8.25	8.50 9.00	9.00 9.50
August 3.....		7.25 7.50	7.75 8.00	8.50 8.75	9.00 9.50
September 6.....		7.25 7.50	8.00 8.50	8.50 8.75	9.00 9.50
October 5.....		7.25 7.50	8.00 8.50	8.50 8.75	9.00 9.50
November 2.....		7.00 7.75	7.00 7.50	8.50 8.75	9.00 9.50
December 7.....		7.00 7.25	7.00 7.50	8.50 8.75	8.75 9.50
1873.					
January 6.....		7.00 7.50	7.50 8.00	8.00 8.50	9.25 10.00
February 1.....		7.50 7.75	8.00 8.25	8.50 9.25	9.50 10.50
March 1.....		7.50 7.75	8.00 8.25	8.50 9.25	9.50 10.50
April 5.....		7.50 7.75	8.00 8.25	8.50 9.25	9.50 10.50
May 3.....	\$11.00	7.50 7.75	7.75 8.25	8.50 9.25	9.00 10.00
June 7.....	11.00	7.00 7.50	8.00 8.25	9.00 9.25	9.50 10.00
July 4.....	10.00	6.75 7.00	7.00 7.50	8.00 8.50	8.50 9.50
August 2.....	10.00	6.75 7.00	7.00 7.50	8.00 8.50	8.50 9.50
September 6.....	10.00	6.75 7.00	7.25 7.75	7.50 8.00	8.75 9.25
October 4.....	10.00	6.75 7.00	7.25 7.75	7.50 8.00	8.75 9.25
November 1.....	10.00	6.75 7.00	7.00 7.50	7.50 8.00	8.25 8.75
December 6.....	10.50	7.00 7.50	7.25 8.00	8.00 8.50	8.50 9.50
1874.					
January 3.....		7.00 7.50	7.25 8.00	8.00 8.50	8.50 9.50
February 7.....		7.00 7.50	7.25 8.00	8.00 8.50	8.50 9.50
March 7.....		6.75 7.25	7.00 7.75	7.75 9.25	8.25 9.50
April 4.....		6.75 7.25	7.00 7.75	7.75 9.25	8.25 9.50
May 2.....		6.75 7.25	7.00 7.75	7.75 9.25	8.25 9.50
June 6.....	9.00	6.75 7.25	7.00 7.75	7.50 8.00	8.25 9.50
July 3.....	8.75	6.50 7.00	6.75 7.50	7.25 7.75	7.75 9.00
August 1.....	9.00	6.00 6.50	6.50 7.50	6.75 7.25	7.25 8.50
September 5.....	9.00	6.00 6.50	6.75 7.00	6.75 7.25	7.25 8.25
October 3.....	9.00	6.00 6.50	6.75 7.00	6.00 7.00	7.25 8.25
November 7.....	9.00	10.50	5.75 6.25	6.25 6.75	6.00 6.50
December 5.....	9.00	10.50	5.75 6.25	6.25 6.75	6.00 6.50

TABLE VII.—*Continued.*

Month and Day of Quotation.	New Process.	Spring.	Bakers.	Amber or Red Winter.	White Winter.
1875.					
January 3.....	\$9.00 @ 10.50	\$5.75 @ 6.25	\$6.25 @ 6.75	\$6.00 @ 6.50	\$6.50 @ 7.50
February 5.....	8.00 10.50	4.75 5.25	5.25 5.50	5.00 5.50	6.00 6.50
March 6.....	8.00 10.50	4.75 5.25	5.25 5.50	5.00 5.50	6.00 6.50
April 3.....	8.25 10.00	5.25 5.75	5.75 6.25	5.50 6.00	6.25 7.00
May 1.....	8.25 10.00	5.25 5.75	5.75 6.25	5.50 6.00	6.25 7.00
June 5.....	8.25 10.00	5.25 5.75	5.75 6.25	5.75 6.00	6.50 7.25
July 3.....	8.25 10.00	5.25 5.75	5.75 6.25	5.50 6.00	6.50 7.25
August 6.....	8.75 10.25	6.25 6.75	6.50 7.25	6.25 7.00	7.25 7.75
September 4.....	8.25 10.00	6.00 6.50	6.50 7.00	6.00 7.00	7.50 7.75
October 2.....	8.25 9.50	6.00 6.50	6.50 7.00	6.25 7.00	7.50 7.75
November 6.....	8.50 10.00	6.00 6.50	6.50 7.50	6.75 7.00	7.00 7.50
December 4.....	8.50 10.00	6.00 6.50	6.50 7.25	6.75 7.00	7.00 7.75
1876.					
January 3.....	8.50 10.00	6.00 6.50	6.50 7.25	6.75 7.00	7.00 7.75
February 5.....	8.50 10.00	6.00 6.50	6.50 7.25	6.75 7.00	7.00 7.75
March 4.....	8.50 10.00	6.00 6.50	6.50 7.25	6.75 7.00	7.00 7.75
April 1.....	8.75 10.00	6.25 6.75	6.75 7.50	7.00 7.25	7.25 8.00
May 6.....	8.75 10.00	6.25 6.75	6.50 7.25	6.50 7.00	7.00 7.75
June 3.....	8.75 10.00	6.25 6.50	6.50 7.00	6.50 7.00	7.00 7.75
July 1.....	8.75 10.00	6.25 6.50	6.50 7.00	6.50 7.00	7.00 7.75
August 5.....	8.50 9.50	6.00 6.25	6.25 6.75	6.25 6.75	6.75 7.55
September 2.....	8.25 9.25	5.75 6.00	6.00 6.75	6.00 6.50	6.50 7.25
October 7.....	8.75 9.75	6.25 6.50	6.50 7.25	6.50 7.00	7.00 7.75
November 4.....	9.00 10.00	6.50 6.75	6.75 7.25	6.75 7.25	7.25 8.00
December 2.....	9.00 10.00	6.50 6.75	6.75 7.25	6.75 7.25	7.25 8.00
1877.					
January 6.....	9.25 10.50	6.75 7.00	7.25 7.75	7.25 7.75	7.75 8.50
February 3.....	9.25 10.50	7.00 7.25	7.50 8.00	7.50 8.00	8.00 8.50
March 3.....	9.50 10.75	7.25 7.50	7.75 8.25	7.75 8.25	8.25 8.75
April 7.....	9.75 11.00	7.00 7.50	7.50 8.00	7.75 8.25	8.00 8.50
May 5.....	12.00 13.00	8.50 9.00	9.50 10.00	10.00 10.50	10.50 11.00
June 2.....	11.00 12.00	7.50 8.50	8.50 9.00	9.00 9.50	9.50 10.00
July 7.....	10.00 12.00	7.75 8.50	8.50 9.25	9.25 9.75	10.00 10.50
August 4.....	9.00 10.00	6.50 7.00	.....	7.50 8.00	8.00 8.50
September 1.....	8.50 9.00	.....	7.00 7.50	6.50 7.00	6.75 7.50
October 6.....	8.50 9.00	6.50 7.00	7.00 7.50	7.12 7.75	7.50 8.00
November 3.....	8.50 9.00	6.25 6.75	6.75 7.25	7.00 7.50	7.25 7.75
December 1.....	8.50 9.00	6.25 6.75	6.75 7.25	7.00 7.50	7.25 7.75
1878.					
January 5.....	8.50 9.00	6.25 6.75	6.50 7.00	7.00 7.50	7.25 7.75
February 2.....	7.75 9.00	5.50 6.50	6.25 6.75	6.50 7.00	7.00 7.50
March 2.....	7.75 9.00	5.25 6.25	6.00 6.75	6.25 6.75	6.75 7.25
April 6.....	7.75 9.00	5.25 6.50	6.25 7.00	6.50 6.75	6.75 7.25
May 3.....	7.50 8.75	5.00 6.25	6.00 6.75	6.25 6.50	6.50 7.00
June 2.....	7.00 8.25	4.75 6.00	5.75 6.50	6.00 6.25	6.25 6.75
July 7.....	6.50 6.75	4.10 5.25	5.00 5.75	5.25 5.50	5.50 6.00
August 4.....	6.75 7.00	4.50 5.25	5.75 6.50	5.25 5.75	5.50 6.00
September 1.....	7.25 8.00	4.75 5.75	5.75 6.50	5.25 5.75	6.00 6.50
October 5.....	7.00 8.00	4.50 5.50	5.25 6.25	5.00 5.50	5.50 6.00
November 2.....	7.00 8.00	4.25 5.25	5.25 6.25	4.75 5.25	5.25 5.75
December 1.....	7.00 8.00	4.25 5.25	4.50 6.00	4.75 5.25	5.25 5.75
1879.					
January 5.....	7.00 8.00	4.25 5.25	4.50 6.00	4.75 5.25	5.25 5.75
February 2.....	7.00 8.00	4.25 5.25	4.50 5.25	4.75 5.25	5.50 6.00
March 3.....	7.00 8.00	4.25 5.50	4.75 6.00	5.00 5.50	5.50 6.50
April 4.....	7.00 8.00	4.25 5.50	4.75 6.00	5.00 5.50	5.50 6.50
May 2.....	7.00 8.00	4.00 5.25	4.50 5.75	4.75 5.25	5.25 6.25
June 6.....	7.25 8.25	4.25 5.50	4.75 6.00	5.00 5.50	5.50 6.50
July 4.....	7.25 8.25	4.25 5.50	4.75 6.00	5.00 5.50	5.50 6.50
August 1.....	7.25 8.25	4.25 5.50	4.75 6.00	5.00 5.50	5.50 6.50
September 5.....	7.25 8.25	4.25 5.50	4.75 6.00	5.00 5.50	5.50 6.50
October 3.....	7.50 8.50	4.50 5.75	5.00 6.25	5.25 5.75	..... 6.00
November 6.....	8.25 9.00	5.25 6.50	6.00 7.00	6.50 7.00	7.00 7.50
December 5.....	8.00 9.00	5.25 6.50	6.00 7.00	6.50 7.00	7.00 7.50

TABLE VII.—Continued.

Month and Day of Quotation.	New Process.		Spring.		Bakers.		Amber or Red Winter.		White Winter	
1880.										
January 2.....	\$8.50	@ 9.50	\$6.00	@ 7.50	\$7.00	@ 8.00	\$7.50	@ 8.00	\$7.75	@ 8.25
February 6.....	8.00	9.00	5.50	7.00	6.50	7.50	7.00	7.50	7.25	7.75
March 5.....	7.75	8.75	5.75	7.00	6.50	7.50	7.00	7.50	7.25	7.75
April 2.....	7.50	8.50	5.25	6.50	6.00	7.00	6.50	7.00	6.75	7.25
May 6.....	7.50	8.25	4.75	6.00	6.00	7.00	6.00	6.50	6.25	6.75
June 4.....	7.50	8.25	4.75	6.00	6.00	7.00	6.00	6.50	6.25	6.75
July 2.....	7.50	8.25	4.75	6.00	6.00	7.00	6.00	6.50	6.00	6.50
August 6.....	7.50	8.25	5.25	6.00	6.25	7.00	6.00	6.50	6.00	6.50
September 3.....	7.75	8.75	5.50	5.75	6.00	6.75	5.75	6.25	5.75	6.25
October 1.....	7.75	8.75	5.50	5.75	6.00	6.75	5.75	6.25	5.75	6.25
November 5.....	7.50	8.25	5.50	6.00	6.25	6.75	5.50	6.00	5.75	6.25
December 3.....	7.75	8.50	5.25	6.25	6.50	7.00	5.75	6.25	6.00	6.50
1881.										
January 1.....	7.50	8.25	5.50	6.00	6.25	6.75	5.50	6.00	5.75	6.25
February 5.....	7.25	8.00	4.75	5.75	6.00	6.50	5.25	6.25	5.50	6.00
March 5.....	7.25	8.00	4.75	5.75	6.00	6.50	5.25	6.25	5.50	6.00
April 2.....	7.50	8.25	5.00	6.00	6.25	6.75	5.50	6.00	5.75	6.25
May 7.....	7.50	8.25	5.00	6.00	6.25	6.75	5.75	6.25	6.00	6.50
June 4.....	7.50	9.00	5.00	6.00	6.25	6.75	5.75	6.25	6.00	6.50
July 2.....	7.50	9.00	5.00	6.25	6.25	6.75	6.00	6.50	6.25	6.75
August 6.....	7.50	9.00	5.75	6.25	6.25	6.75	6.00	6.50	6.25	6.75
September 4.....	8.00	9.50	6.75	7.25	7.00	7.50	7.25	7.75	7.50	8.00
October 1.....	8.75	9.75	7.50	8.00	7.75	8.25	8.00	8.50	8.25	8.75
November 5.....	8.50	9.50	7.50	8.00	7.25	7.75	7.50	8.25	7.75	8.25
December 3.....	8.50	9.50	7.50	8.00	7.25	7.75	7.50	8.25	7.50	8.00
			Straight Minnesota.		Clear Minnesota.					
1882.										
January 7.....	8.25	9.25	.....	.....	.....	.....	.....	.....	7.50	8.00
February 4.....	8.25	9.25	.....	.....	.....	.....	.....	.....	7.50	8.00
March 4.....	8.25	9.25	.....	.....	.....	.....	.....	.....	7.50	8.00
April 1.....	8.25	9.25	7.25	8.00	7.25	7.50	.....	.....	7.25	7.75
May 8.....	8.75	9.25	7.50	8.25	7.25	7.75	.....	.....	7.50	8.00
June 3.....	8.75	9.50	7.75	.....	7.50	.....	.....	.....	7.50	8.00
July 7.....	8.25	9.00	7.50	.....	7.00	.....	.....	.....	7.00	7.50
August 6.....	8.25	9.00	7.75	.....	7.00	.....	.....	.....	6.75	7.25
September 2.....	7.75	8.75	7.00	.....	5.75	6.75	.....	.....	6.25	6.75
October 7.....	7.75	9.00	6.75	7.00	6.50	6.75	.....	.....	6.00	.....
November 4.....	7.50	8.00	6.50	.....	5.50	.....	.....	.....	6.00	.....
December 2.....	7.50	8.00	6.50	.....	5.50	.....	.....	.....	6.00	.....
1883.										
January 6.....	7.50	8.00	6.50	.....	5.50	.....	.....	.....	6.00	.....
February 4.....	7.75	8.25	6.75	.....	5.75	.....	.....	.....	6.25	.....
March 3.....	8.25	8.75	7.00	7.25	6.25	.....	.....	.....	5.25	.....
April 6.....	8.25	8.75	7.00	7.25	6.25	.....	.....	.....	6.25	.....
May 5.....	7.75	8.25	6.25	6.75	5.50	6.00	.....	.....	6.00	.....
June 1.....	7.50	8.00	6.25	6.75	5.50	6.00	.....	.....	6.00	.....
July 7.....	7.50	8.00	6.25	6.75	5.50	6.00	.....	.....	6.25	.....
August 4.....	7.00	7.50	6.25	6.75	5.50	6.00	.....	.....	5.75	6.25
September 1.....	7.25	7.50	6.25	6.75	5.50	6.00	.....	.....	5.75	6.25
October 6.....	7.25	7.50	6.25	6.75	5.50	6.00	.....	.....	5.75	6.25
November 3.....	7.25	7.50	6.25	6.75	5.50	6.00	.....	.....	5.75	6.25
December 1.....	7.25	7.50	6.25	6.75	5.50	6.00	.....	.....	5.75	6.25
1884.										
January 5.....	7.00	7.50	6.25	6.75	5.50	6.00	.....	.....	6.00	6.25
February 2.....	7.00	7.50	6.25	6.75	5.50	6.00	.....	.....	6.00	6.25
March 1.....	7.00	7.50	6.25	6.75	5.50	6.00	.....	.....	6.00	6.25
April 5.....	7.00	7.50	6.25	6.75	5.50	6.00	.....	.....	6.00	6.25
May 2.....	6.75	7.25	5.75	6.00	5.25	5.75	.....	.....	6.00	6.25
June 7.....	6.75	7.25	5.75	6.00	5.25	5.75	.....	.....	6.00	6.25
July 5.....	6.50	7.00	5.50	5.75	5.00	5.50	.....	.....	5.50	5.75
August 2.....	6.50	7.00	5.50	5.75	5.00	5.50	.....	.....	5.50	.....
September 6.....	6.25	6.75	5.00	5.25	4.75	5.25	.....	.....	5.25	.....
October 4.....	6.25	6.75	5.00	5.25	4.75	5.25	.....	.....	5.25	.....
November 1.....	6.00	6.50	4.75	5.00	4.50	5.00	.....	.....	4.75	5.00
December 6.....	5.50	5.75	4.50	4.75	4.25	4.75	.....	.....	4.50	4.75
1885.										
January 3.....	5.75	6.00	4.75	5.00	4.50	5.00	.....	.....	4.75	5.00
February 7.....	6.25	6.50	5.00	5.25	4.75	5.25	.....	.....	5.00	5.25
March 7.....	5.75	6.00	5.00	5.25	4.75	5.25	.....	.....	4.75	5.25
April 4.....	5.75	6.00	5.00	5.25	4.75	5.25	.....	.....	4.75	5.00
May 2.....	6.50	7.25	5.75	6.25	5.25	5.75	.....	.....	5.75	6.00
June 6.....	5.75	6.50	5.25	5.75	4.75	5.25	.....	.....	5.25	5.50
July 4.....	5.75	6.50	5.25	5.75	4.75	5.25	.....	.....	5.25	5.50
August 1.....	5.75	6.50	5.25	5.75	4.75	5.25	.....	.....	5.25	5.50
September 5.....	5.50	6.25	5.00	5.50	4.50	5.00	.....	.....	5.00	5.25
October 3.....	5.50	6.25	5.00	5.50	4.50	5.00	.....	.....	5.00	5.25
November 7.....	6.00	6.50	5.25	5.75	4.75	5.25	.....	.....	5.25	5.75
December 5.....	6.00	6.50	5.25	5.75	4.75	5.25	.....	.....	5.25	5.75



TABLE VII.—Continued.

Month and day of Quotation.	New Process.		Straight Minnesota.		Clear Minnesota.		Amber or Red Winter.		White Winter.	
1886.										
January 2.....	\$6.00 @	6.50	\$5.25 @	5.75	\$4.75 @	5.25	..... @	.....	\$5.25 @	5.75
February 6.....	6.00	6.50	5.25	5.75	4.75	5.25	.....	.....	5.25	5.75
March 6.....	5.50	6.00	5.00	5.50	4.00	4.50	.....	.....	5.00	5.50
April 3.....	5.50	6.00	5.00	5.50	4.00	4.50	.....	.....	5.00	5.50
May 1.....	5.00	5.50	4.75	5.25	3.80	4.30	.....	.....	4.75	5.25
June 5.....	5.00	5.50	4.75	5.25	3.80	4.30	.....	.....	4.75	5.25
July 3.....	5.00	5.50	4.50	5.00	3.50	4.00	.....	.....	4.50	5.00
August 7.....	5.25	5.75	4.50	5.00	3.75	4.25	.....	.....	4.50	5.00
September 4.....	5.25	5.75	4.50	5.00	3.75	4.25	.....	.....	4.50	5.00
October 2.....	5.25	5.75	4.50	5.00	3.75	4.25	.....	.....	4.50	5.00
November 7.....	4.75	5.25	4.25	4.75	3.75	4.25	.....	.....	4.25	4.75
December 4.....	4.75	5.25	4.25	4.75	3.75	4.25	.....	.....	4.25	4.75
1887.										
January 7.....	5.25	5.75	4.50	4.75	4.00	4.25	.....	.....	4.50	5.00
February 5.....	5.25	5.75	4.50	4.75	4.00	4.25	.....	.....	4.50	5.00
March 5.....	5.25	5.75	4.50	4.75	4.00	4.25	.....	.....	4.50	5.00
April 2.....	5.25	5.75	4.50	4.75	4.00	4.25	.....	.....	4.50	5.00
May 7.....	5.25	5.75	4.50	4.75	4.00	4.25	.....	.....	4.50	5.00
June 4.....	5.25	5.75	4.50	4.75	4.00	4.25	.....	.....	4.50	5.00
July 2.....	5.25	5.75	4.50	4.75	4.00	4.25	.....	.....	4.50	5.00
August 6.....	5.25	5.75	4.50	4.75	4.00	4.25	.....	.....	4.50	5.00
September 3.....	5.25	5.75	4.50	4.75	4.00	4.25	.....	.....	4.50	5.00
October 1.....	4.75	5.00	4.50	4.75	4.00	4.25	.....	.....	4.25	4.50
November 5.....	4.75	5.00	4.25	4.50	4.00	4.25	.....	.....	4.25	4.50
December 3.....	5.25	5.50	4.75	5.00	4.50	4.75	.....	.....	4.75	5.00
1888.										
January 7.....	5.25	5.50	4.75	5.00	4.50	4.75	.....	.....	4.75	5.00
February 4.....	5.25	5.50	4.75	5.00	4.50	4.75	.....	.....	4.75	5.00
March 3.....	5.25	5.50	4.75	5.00	4.50	4.75	.....	.....	4.75	5.00
April 7.....	5.00	5.25	4.50	4.75	4.25	4.50	.....	.....	4.50	4.75
May 5.....	5.00	5.25	4.50	4.75	4.25	4.50	.....	.....	4.50	4.75
June 2.....	5.25	5.50	4.75	5.00	4.50	4.75	.....	.....	5.00	5.25
July 7.....	5.00	5.25	4.50	4.75	4.25	4.50	.....	.....	4.75	5.00
August 4.....	5.00	5.25	4.50	4.75	4.25	4.50	.....	.....	4.75	5.00
September 1.....	5.75	6.00	4.75	5.00	4.50	4.75	.....	.....	5.00	5.25
October 6.....	7.50	7.75	6.75	7.00	5.50	5.75	.....	.....	6.50	6.75
November 3.....	8.00	8.25	7.25	7.50	6.00	6.25	.....	.....	7.00	7.25
December 1.....	7.25	7.50	6.75	7.00	5.25	5.50	.....	.....	6.00	6.25
1889.										
	Patent Minnesota.		Patent Winter.		Straight Minnesota.		Straight Winter.		Baker's Spring.	
January 5.....	7.25	7.50	.....	.....	6.75	7.00	.....	.....	5.25	5.50
February 16.....	7.25	7.50	7.00	7.25	6.50	6.75	5.75	6.00	6.00	6.25
March 2.....	7.25	7.50	7.00	7.25	6.50	6.75	5.75	6.00	6.00	6.25
April 6.....	7.25	7.50	7.00	7.25	6.50	6.75	5.75	6.00	6.00	6.25
May 4.....	6.25	6.50	6.25	6.50	5.75	6.00	5.00	5.25	5.50	5.75
June 1.....	6.00	6.75	6.00	6.25	5.75	6.00	5.00	5.25	5.50	5.75
July 6.....	6.25	7.00	6.00	6.25	6.00	6.25	5.00	5.25	5.75	6.00
August 3.....	6.25	7.00	6.00	6.25	6.00	6.25	5.00	5.25	5.75	6.00
September 7.....	6.00	6.75	5.75	6.00	5.75	6.00	4.75	5.00	5.50	5.75
October 7.....	5.50	6.00	5.50	5.75	5.25	5.50	4.50	4.75	5.00	5.25
November 2.....	5.50	6.00	5.50	5.75	5.25	5.50	4.50	4.75	5.00	5.25
December 7.....	5.50	6.00	5.50	5.75	5.25	5.50	4.50	4.75	5.00	5.25
1890.										
January 4.....	5.25	5.50	5.25	5.50	4.75	5.00	4.50	4.75	4.25	4.50
February 1.....	5.25	5.50	5.25	5.50	4.75	5.00	4.50	4.75	4.25	4.50
March 1.....	5.25	5.50	5.25	5.50	4.75	5.00	4.50	4.75	4.25	4.50
April 5.....	5.50	5.75	5.00	5.25	.....	.....	4.50	4.75	4.25	4.50
May 5.....	6.00	6.25	5.75	6.00	.....	.....	5.00	5.25	5.00	5.25
June 6.....	6.00	6.50	5.75	6.25	.....	.....	5.00	5.50	5.00	5.25
July 4.....	5.50	6.00	5.50	5.75	.....	.....	4.75	5.00	4.50	4.75
August 1.....	6.00	6.50	6.00	6.25	.....	.....	5.25	5.50	5.00	5.25
September 5.....	6.50	7.00	6.25	6.50	.....	.....	5.50	5.75	5.50	5.75
October 3.....	6.50	7.00	6.25	6.50	.....	.....	5.50	5.75	5.50	5.75
November 7.....	6.50	7.00	6.50	6.75	.....	.....	5.75	6.00	5.00	5.75
December 8.....	6.50	7.00	6.50	6.75	.....	.....	5.75	6.00	5.00	5.75
1891.										
January 5.....	6.50	7.00	6.50	6.75	.....	.....	5.75	6.00	5.50	5.75
February 2.....	6.00	6.25	5.75	6.00	.....	.....	5.00	5.25	5.00	5.50
March 2.....	5.50	5.75	5.50	5.75	.....	.....	5.00	5.25	5.00	5.25
April 1.....	5.75	6.00	5.75	6.00	.....	.....	5.25	5.50	5.25	5.50
May 2.....	6.25	6.50	6.25	6.50	.....	.....	5.75	6.00	5.75	6.00
June 2.....	6.00	6.25	6.00	6.25	.....	.....	5.50	5.75	5.75	6.00
July 2.....	5.75	6.25	5.75	6.00	.....	.....	5.25	5.50	5.50	5.75
August 2.....	5.75	6.25	5.75	6.00	.....	.....	5.25	5.50	5.50	5.75
September 2.....	6.00	6.25	6.00	6.25	.....	.....	5.50	5.75	5.75	6.00
October 2.....	5.75	6.00	5.75	6.00	.....	.....	5.25	5.50	5.50	5.75
November 3.....	5.75	6.00	5.75	6.00	.....	.....	5.25	5.50	5.50	5.75
December 2.....	5.75	6.00	5.75	6.00	.....	.....	5.25	5.50	5.50	5.75

TABLE VIII.

The Prices at Buffalo, N. Y., 1870-1890, of Spring and Straight Minnesota flour, Compared with the Prices of White Winter and Straight Winter Flour.

Month and day of Comparison.	Excess in prices of White Winter over Spring.	Month and day of Comparison.	Excess in prices of White Winter over Spring.	Month and day of Comparison.	Excess in prices of White Winter over Spring.
1870.		1874.		1878.	
January 5.....	\$1.25 @ \$2.00	January 3.....	\$1.50 @ \$2.00	January 5....	\$1.00 @ \$1.00
February 1.....	1.25 1.80	February 7.....	1.50 2.00	February 2....	1.50 1.00
March 1.....	1.50 1.75	March 7.....	1.50 2.25	March 2.....	1.50 1.00
April 2.....	1.50 1.75	April 4.....	1.50 2.25	April 6.....	1.50 .75
May 2.....	1.50 1.75	May 2.....	1.50 2.25	May 3.....	1.50 .75
June 1.....	1.25 1.50	June 6.....	1.50 2.25	June 2.....	1.50 .75
July 2.....	1.50 1.50	July 3.....	1.25 2.00	July 7.....	1.40 .75
August 1.....	1.00 1.25	August 1.....	1.25 2.00	August 4.....	1.00 .75
September 1....	1.00 1.25	September 5....	1.25 1.75	September 1....	1.25 .75
October 1.....	1.25 1.50	October 3.....	1.25 1.75	October 5....	1.00 .50
November 1.....	1.50 1.50	November 7....	.75 1.25	November 2....	1.00 .50
December 1.....	1.25 1.50	December 5....	.75 1.25	December 1....	1.00 .50
1871.		1875.		1879.	
January 7.....	1.25 1.25	January 3.....	.75 1.25	January 5....	1.00 .50
February 4.....	1.00 1.25	February 5....	1.25 1.25	February 2....	1.25 .75
March 4.....	1.00 1.25	March 6.....	1.25 1.25	March 3.....	1.25 1.00
April 1.....	1.00 1.50	April 3.....	1.00 1.25	April 4.....	1.25 1.00
May 5.....	1.25 1.75	May 1.....	1.00 1.25	May 2.....	1.25 1.00
June 3.....	1.00 1.50	June 5.....	1.25 1.50	June 6.....	1.25 1.00
July 3.....	1.00 1.25	July 3.....	1.25 1.50	July 4.....	1.25 1.00
August 5.....	.75 1.25	August 6.....	1.00 1.00	August 1.....	1.25 1.00
September 2....	.75 1.25	September 4....	1.50 1.25	September 5....	1.25 1.00
October 7.....	1.00 1.50	October 2.....	1.50 1.25	October 3.....	1.50 .25
November 4.....	1.00 1.25	November 6....	1.00 1.00	November 6....	1.75 1.00
December 2.....	1.00 1.25	December 4....	1.00 1.25	December 5....	1.75 1.00
1872.		1876.		1880.	
January 5.....	.75 1.00	January 3.....	1.00 1.25	January 2....	1.75 .75
February 3.....	.75 1.00	February 5....	1.00 1.25	February 6....	1.75 .75
March 2.....	.75 1.00	March 4.....	1.00 1.25	March 5.....	1.50 .75
April 6.....	1.00 1.25	April 1.....	1.00 1.25	April 2.....	1.50 .75
May 4.....	1.00 1.75	May 6.....	.75 1.00	May 6.....	1.50 .75
June 4.....	2.00 2.50	June 3.....	.75 1.25	June 4.....	1.50 .75
July 6.....	1.75 1.75	July 1.....	.75 1.25	July 2.....	1.25 .50
August 3.....	1.75 2.00	August 5.....	.75 1.30	August 6.....	.75 .50
September 6....	1.75 2.00	September 2....	.75 1.25	September 3....	.25 .50
October 5.....	1.75 2.00	October 7.....	.75 1.25	October 1.....	.25 .50
November 2.....	2.00 1.75	November 4....	.75 1.25	November 5....	.25 .25
December 7.....	1.75 2.25	December 2....	.75 1.25	December 3....	.75 .25
1873.		1877.		1881.	
January 6.....	2.25 2.50	January 6.....	1.00 1.50	January 1....	.25 .25
February 1.....	2.00 2.75	February 3....	1.00 1.25	February 5....	.75 .25
March 1.....	2.00 2.75	March 3.....	1.00 1.25	March 5.....	.75 .25
April 5.....	2.00 2.75	April 7.....	1.00 1.00	April 2.....	.75 .25
May 3.....	1.50 2.25	May 5.....	2.00 2.00	May 7.....	1.00 .50
June 7.....	2.50 2.50	June 2.....	2.00 1.50	June 4.....	1.00 .50
July 4.....	1.75 2.50	July 7.....	2.25 2.00	July 2.....	1.25 .50
August 2.....	1.75 2.50	August 4.....	1.50 1.50	August 6.....	.50 .50
September 6....	2.00 2.25	September 1....	.....	September 4....	.75 .75
October 4.....	2.00 2.25	October 6.....	1.00 1.00	October 1.....	.75 .75
November 1.....	1.50 1.75	November 3....	1.00 1.00	November 5....	.25 .25
December 6....	1.50 2.00	December 1....	1.00 1.00	December 3....	.....

TABLE VIII—Continued.

Month and Day of Comparison.	Excess in Prices of Straight Minnesota over White Winter.	Month and Day of Comparison.	Excess in Prices of Straight Minnesota over White Winter.	Month and Day of Comparison.	Excess in Prices of Straight Minnesota over White Winter.
1882.		1885.		1888.	
January 7.....	@.....	January 3.....	@.....	January 7.....	@.....
February 4.....	.....	February 7.....	.....	February 4.....	.....
March 4.....	.....	March 7.....	\$.25	March 3.....	.....
April 1.....	\$.25	April 4.....	.25	April 7.....	.....
May 8.....	.25	May 2.....	.25	May 5.....	.....
June 3.....	\$.25 —.25	June 6.....	.25	June 2.....	—\$.25 —.25
July 7.....	.50	July 4.....	.25	July 7.....	— .25 — .25
August 6.....	1.00 .50	August 1.....	.25	August 4.....	— .25 — .25
September 2.....	.75 .25	September 5.....	.25	September 1.....	— .25 — .25
October 7.....	.75 1.00	October 3.....	.25	October 6.....	.25 .25
November 4.....	..... .50	November 7.....	.....	November 3.....	.25 .25
December 2.....	..... .50	December 5.....	.....	December 1.....	.75 .75
1883.		1886.		1889.	
January 6.....	..... .50	January 2.....	.....	January 5.....	.....
February 4.....	..... .50	February 6.....	.....	February 16.....	.75 .75
March 3.....	.75 1.00	March 6.....	.....	March 2.....	.75 .75
April 6.....	.75 1.00	April 3.....	.....	April 6.....	.75 .75
May 5.....	.25 .75	May 1.....	.....	May 4.....	.75 .75
June 1.....	.25 .75	June 5.....	.....	June 1.....	.75 .75
July 7.....	..... .50	July 3.....	.....	July 6.....	1.00 1.00
August 4.....	.50 .50	August 7.....	.....	August 3.....	1.00 1.00
September 1.....	.50 .50	September 4.....	.....	September 7.....	1.00 1.00
October 6.....	.50 .50	October 2.....	.....	October 7.....	.75 .75
November 3.....	.50 .50	November 7.....	.....	November 2.....	.75 .75
December 1.....	.50 .50	December 4.....	.....	December 7.....	.75 .75
1884.		1887.		1890.	
January 5.....	.25 .50	January 7.....	— .25	January 4.....	.25 .25
February 2.....	.25 .50	February 5.....	— .25	February 1.....	.25 .25
March 1.....	.25 .50	March 5.....	— .25	March 1.....	.25 .25
April 5.....	.25 .50	April 2.....	— .25	April 5.....	Straight Min-
May 2.....	— .25 — .25	May 7.....	— .25	May 5.....	nesota drop-
June 7.....	— .25 — .25	June 4.....	— .25	June 6.....	ped out of
July 5.....	..... .25	July 2.....	— .25	July.....	market here
August 2.....	..... .25	August 6.....	— .25	August.....	.....
September 6.....	— .25	September 3.....	— .25	September.....	.....
October 4.....	— .25	October 1.....	.25 .25	October.....	.....
November 1.....	.....	November 5.....	.....	November.....	.....
December 6.....	.....	December 3.....	.....	December.....	.....



TABLE IX.

The Prices at Buffalo, N. Y., 1870-1881, of Spring Wheat Flour, Compared with the Prices of Flour Manufactured from Red and Amber Winter Wheat.

Month and Day of Comparison.	Excess in Prices of Red or Amber Winter over Spring.	Month and Day of Comparison.	Excess in Prices of Red or Amber Winter over Spring.	Month and Day of Comparison.	Excess in Prices of Red or Amber Winter over Spring.
1870.		1874.		1878.	
January 5.....	@ .....	January 3.....	\$1.00 @ 1.00	January 5.....	\$.75 @ .75
February 1.....	.....	February 7.....	1.00 1.00	February 2.....	1.00 .50
March 1.....	.....	March 7.....	1.00 2.00	March 2.....	1.00 .50
April 2.....	.....	April 4.....	1.00 2.00	April 6.....	1.25 .25
May 2.....	.....	May 2.....	1.00 2.00	May 3.....	1.25 .25
June 1.....	\$.75 .75	June 6.....	.75 .75	June 2.....	1.25 .25
July 2.....	.75 .50	July 3.....	.75 .75	July 7.....	1.15 .25
August 1.....	.50 .50	August 1.....	.75 .75	August 4.....	.75 .50
September 1.....	.75 .50	September 5.....	.75 .75	September 1.....	.50 .....
October 1.....	1.00 .75	October 3.....	..... .50	October 5.....	.50 .....
November 1.....	.75 .50	November 7.....	.25 .25	November 2.....	.50 .....
December 1.....	1.00 1.00	December 5.....	.25 .25	December 1.....	.50 .....
1871.		1875.		1879.	
January 7.....	.75 .50	January 3.....	.25 .25	January 5.....	.50 .....
February 4.....	.75 .50	February 5.....	.25 .25	February 2.....	.50 .....
March 4.....	.75 .50	March 6.....	.25 .25	March 3.....	.75 .....
April 1.....	.25 .25	April 3.....	.25 .25	April 4.....	.75 .....
May 5.....	.75 .50	May 1.....	.25 .25	May 2.....	.75 .....
June 3.....	.50 .50	June 5.....	.50 .25	June 6.....	.75 .....
July 3.....	.75 .75	July 3.....	.25 .25	July 4.....	.75 .....
August 5.....	.50 .75	August 6.....	..... .25	August 1.....	.75 .....
September 2.....	.25 .....	September 4.....	..... .50	September 5.....	.75 .....
October 7.....	.25 .50	October 2.....	.25 .50	October 3.....	.75 .....
November 4.....	.50 .25	November 6.....	.75 .50	November 6.....	1.25 .50
December 2.....	.25 .25	December 4.....	.75 .50	December 5.....	1.25 .50
1872.		1876.		1880.	
January 5.....	.25 .25	January 3.....	.75 .50	January 2.....	1.50 .50
February 3.....	.25 .25	February 5.....	.75 .50	February 6.....	1.50 .50
March 2.....	.25 .25	March 4.....	.75 .50	March 5.....	1.25 .50
April 6.....	.50 .25	April 1.....	.75 .50	April 2.....	1.25 .50
May 4.....	.25 .50	May 6.....	.25 .25	May 6.....	1.25 .50
June 4.....	..... .50	June 3.....	.25 .50	June 4.....	1.25 .50
July 6.....	1.25 1.25	July 1.....	.25 .50	July 2.....	1.25 .50
August 3.....	1.25 1.25	August 5.....	.25 .50	August 6.....	.75 .50
September 6.....	1.25 1.25	September 2.....	.25 .50	September 3.....	.25 .50
October 5.....	1.25 1.25	October 7.....	.25 .50	October 1.....	.25 .50
November 2.....	1.50 1.00	November 4.....	.25 .50	November 5.....	..... .....
December 7.....	1.50 1.50	December 2.....	.25 .50	December 3.....	.50 .....
1873.		1877.		1881.	
January 6.....	1.00 1.00	January 6.....	.50 .75	January 1.....	..... .....
February 1.....	1.00 1.50	February 3.....	.50 .75	February 5.....	.50 .50
March 1.....	1.00 1.50	March 3.....	.50 .75	March 5.....	.50 .50
April 5.....	1.00 1.50	April 7.....	.75 .75	April 2.....	.50 .....
May 3.....	1.00 1.50	May 5.....	1.50 1.50	May 7.....	.75 .25
June 7.....	2.00 1.75	June 2.....	1.50 1.00	June 4.....	.75 .25
July 4.....	1.25 1.50	July 7.....	1.50 1.25	July 2.....	1.00 .25
August 2.....	1.25 1.50	August 4.....	1.00 1.00	August 6.....	.25 .25
September 6.....	.75 1.00	September 1.....	..... .....	September 4.....	.50 .50
October 4.....	.75 1.00	October 6.....	.62 .75	October 1.....	.50 .50
November 1.....	.75 1.00	November 3.....	.75 .75	November 5.....	.25 .....
December 6.....	1.00 1.00	December 1.....	.75 .75	December 3.....	.25 .....

TABLE X.

The Prices at Buffalo, N. Y., 1873-1891, of the New Process or Patent Minnesota Flour, Compared with the Prices of White Winter or Patent Winter Flour.

Month and Day of Comparison.	Excess in Prices of New Process over White Winter.	Month and Day of Comparison.	Excess in Prices of New Process over White Winter.	Month and Day of Comparison.	Excess in Prices of New Process over White Winter.
1873.		1877.		1881.	
January .....	@ .....	January 6...	\$1.50 @ 2.00	January 1...	\$1.75 @ 2.00
February .....	.....	February 3...	1.25 2.00	February 5...	1.75 2.00
March .....	.....	March 3 .....	1.25 2.00	March 5.....	1.75 2.00
April .....	.....	April 7 .....	1.75 2.50	April 2.....	1.75 2.00
May 3 .....	\$2.00 1.00	May 5 .....	1.50 2.00	May 7.....	1.50 1.75
June 7.....	1.50 1.00	June 2.....	1.50 2.00	June 4.....	1.50 2.50
July 4.....	1.50 .50	July 7.....	..... 1.50	July 2.....	1.25 2.25
August 2.....	1.50 .50	August 4.....	1.00 1.50	August 6 .....	1.25 2.25
September 6...	1.25 .75	September 1.	1.75 1.50	September 4.	.50 1.50
October 4 .....	1.25 .75	October 6 .....	1.00 1.00	October 1....	.50 1.00
November 1....	1.75 1.25	November 3.	1.25 1.25	November 5.	.75 1.25
December 6...	2.00 1.50	December 1..	1.25 1.25	December 3.	1.00 1.50
1874.		1878.		1882.	
January.....	.....	January 5...	1.25 1.25	January 7....	.75 1.25
February .....	.....	February 2..	.75 1.50	February 4..	.75 1.25
March .....	.....	March 2.....	1.00 1.75	March 4.....	.75 1.25
April .....	.....	April 6 .....	1.00 1.75	April 1.....	1.00 1.50
May .....	.....	May 3 .....	1.00 1.75	May 8.....	1.25 1.25
June 6.....	.75 -.50	June 2.....	.75 1.50	June 3.....	1.25 1.50
July 3.....	1.00 -.25	July 7.....	1.00 .75	July 7.....	1.25 1.50
August 1.....	1.75 2.50	August 4.....	1.25 1.00	August 6....	1.50 1.75
September 5...	1.75 2.75	September 1.	1.25 1.50	September 2.	1.50 2.00
October 3.....	1.75 2.75	October 5.....	1.50 2.00	October 4....	1.75 3.00
November 7....	2.50 3.00	November 2.	1.75 2.25	November 4.	1.50 2.00
December 5 ..	2.50 3.00	December 1..	1.75 2.25	December 2.	1.50 2.00
1875.		1879.		1883.	
January 3....	2.50 3.00	January 5...	1.75 2.25	January 6....	1.50 2.00
February 5....	2.00 4.00	February 2..	1.50 2.00	February 4..	1.50 2.00
March 6.....	2.00 4.00	March 3.....	1.50 1.50	March 3.....	2.00 2.50
April 3.....	2.00 3.00	April 4 .....	1.50 1.50	April 6.....	2.00 2.50
May 1.....	2.00 3.00	May 2.....	1.75 1.75	May 5.....	1.75 2.25
June 5.....	1.75 2.75	June 6.....	1.75 1.75	June 1.....	1.50 2.00
July 3.....	1.75 2.75	July 4.....	1.75 1.75	July 7.....	1.25 1.75
August 6.....	1.50 2.50	August 1....	1.75 1.75	August 4....	1.25 1.25
September 4..	.75 2.25	September 5.	1.75 1.75	September 1.	1.50 1.25
October 2.....	.75 1.75	October 3....	1.50 2.50	October 6....	1.50 1.25
November 6....	1.50 2.50	November 6.	1.25 1.50	November 3.	1.50 1.25
December 4 ..	1.50 2.25	December 5.	1.00 1.50	December 1.	1.50 1.25
1876.		1880.		1884.	
January 3....	1.50 2.25	January 2...	.75 1.25	January 5....	1.00 1.25
February 5....	1.50 2.25	February 6..	.75 1.25	February 2..	1.00 1.25
March 4.....	1.50 2.25	March 5.....	.50 1.00	March 1.....	1.00 1.25
April 1.....	1.50 2.00	April 2.....	.75 1.25	April 5.....	1.00 1.25
May 6.....	1.75 2.25	May 6.....	1.25 1.50	May 2.....	.75 1.00
June 3.....	1.75 2.25	June 4.....	1.25 1.50	June 7.....	.75 1.00
July 1.....	1.75 2.25	July 2.....	1.50 1.75	July 5.....	1.00 1.25
August 5.....	1.75 1.95	August 6 .....	1.50 1.75	August 2....	1.00 1.50
September 2..	1.75 2.00	September 3.	2.00 2.50	September 6.	1.00 1.50
October 7.....	1.75 2.00	October 1....	2.00 2.50	October 4....	1.00 1.50
November 4....	1.75 2.00	November 5.	1.75 2.00	November 1.	1.25 1.50
December 2...	1.75 2.00	December 3..	1.75 2.00	December 6..	1.00 1.00

TABLE X.—Continued.

The Prices at Buffalo, N. Y., 1873—1891, of the New Process or Patent Minnesota Flour, Compared with the Prices of White Winter or Patent Winter Flour

Month and Day of Comparison.	Excess in Prices of New Process over White Winter	Month and Day of Comparison.	Excess in Prices of Patent Minn. over Patent Winter.
1885.		1889.	
January 3.....	\$1.00 @ 1.00	January 5.....	.....
February 7.....	1.25 1.25	February 16.....	\$ .25 @ .25
March 7.....	1.00 .75	March 2.....	.25 .25
April 4.....	1.00 1.00	April 6.....	.25 .25
May 2.....	.75 1.25	May 4.....	.....
June 6.....	.50 1.00	June 1.....	.50
July 4.....	.50 1.00	July 6.....	.25 .75
August 1.....	.50 1.00	August 3.....	.25 .75
September 5.....	.50 1.00	September 7.....	.25 .75
October 3.....	.50 1.00	October 7.....	.25
November 7.....	.75 .75	November 2.....	.25
December 5.....	.75 .75	December 7.....	.25
1886.		1890.	
January 2.....	.75 .75	January 4.....	.....
February 6.....	.75 .75	February 1.....	.....
March 6.....	.50 .50	March 1.....	.....
April 3.....	.50 .50	April 5.....	.50 .50
May 1.....	.25 .25	May 5.....	.25 .25
June 5.....	.25 .25	June 6.....	.25 .25
July 3.....	.50 .50	July 4.....	.25 .25
August 7.....	.75 .75	August 1.....	.25 .25
September 4.....	.75 .75	September 5.....	.25 .50
October 2.....	.75 .75	October 3.....	.25 .50
November 7.....	.50 .50	November 7.....	.25 .25
December 4.....	.50 .50	December 8.....	.25
1887.		1891.	
January 7.....	.75 .75	January 5.....	.25
February 5.....	.75 .75	February 2.....	.25 .25
March 5.....	.75 .75	March 2.....	.....
April 2.....	.75 .75	April 1.....	.....
May 7.....	.75 .75	May 2.....	.....
June 4.....	.75 .75	June 2.....	.....
July 2.....	.75 .75	July 2.....	.25
August 6.....	.75 .75	August 2.....	.25
September 3.....	.75 .75	September 2.....	.....
October 1.....	.50 .50	October 2.....	.....
November 5.....	.50 .50	November 3.....	.....
December 3.....	.50 .50	December 2.....	.....
1888.			
January 7.....	.50 .50		
February 4.....	.50 .50		
March 3.....	.50 .50		
April 7.....	.50 .50		
May 5.....	.50 .50		
June 2.....	.25 .25		
July 7.....	.25 .25		
August 4.....	.25 .25		
September 1.....	.75 .75		
October 6.....	1.00 1.00		
November 3.....	1.00 1.00		
December 1.....	1.25 1.25		



TABLE XI.

The Prices at Buffalo, N. Y., 1875-1888, of New Process Flour manufactured in the West (Minnesota), Compared with the Prices of the same kind of flour manufactured in Buffalo.

Month and day of comparison.	Selling prices of		Excess in price of western over Buffalo flour.	Variation in values of new process flour.
	Western made flour.	Buffalo made flour.		
1875.				
January .....	\$9.00@10.50	\$8.50@10.00	\$50@ .50	..... \$2.00
February .....	8.00 10.50	8.00 9.50	..... 1.00	..... 2.50
March .....	8.00 10.50	8.00 9.50	..... 1.00	..... 2.50
April .....	8.25 10.00	8.50 9.50	— .25 .50	..... 1.75
May .....	8.25 10.00	8.00 9.50	.25 .50	..... 2.00
June .....	8.25 10.00	8.00 9.50	.25 .50	..... 2.00
July .....	8.25 10.00	8.00 9.50	.25 .50	..... 2.00
August .....	8.75 10.25	9.00 9.50	— .25 .75	..... 2.00
September .....	8.25 10.00	8.75 9.75	— .50 .25	..... 1.75
October .....	8.25 9.50	8.50 9.00	— .25 .50	..... 1.25
November .....	8.50 10.00	8.50 9.00	..... 1.00	..... 1.50
December .....	8.50 10.00	8.50 9.00	..... 1.00	..... 1.50
1876.				
January .....	8.50 10.00	8.75 9.25	— .25 .75	..... 1.50
February .....	8.50 10.00	8.75 9.25	— .25 .75	..... 1.50
March .....	8.50 10.00	8.75 9.25	— .25 .75	..... 1.50
April .....	8.75 10.00	9.00 9.50	— .25 .50	..... 1.25
May .....	8.75 10.00	9.00 9.50	— .25 .50	..... 1.25
June .....	8.75 10.00	8.75 9.25	..... .75	..... 1.25
July .....	8.75 10.00	8.75 9.25	..... .75	..... 1.25
August .....	8.50 9.50	8.50 9.00	..... .50	..... 1.00
September .....	8.25 9.25	8.25 8.75	..... .50	..... 1.00
October .....	8.75 9.75	8.75 9.25	..... .50	..... 1.00
November .....	9.00 10.00	9.00 9.50	..... .50	..... 1.60
December .....	9.00 10.00	9.00 9.50	..... .50	..... 1.00
1877.				
January .....	9.25 10.50	9.00 9.50	.25 1.00	..... 1.50
February .....	9.25 10.50	9.00 9.50	.25 1.00	..... 1.50
March .....	9.50 10.75	9.50 10.00	..... .75	..... 1.25
April .....	9.75 11.00	9.50 10.00	.25 1.00	..... 1.50
May .....	12.00 13.00	12.00 12.50	..... .50	..... 1.00
June .....	11.00 12.00	11.00 11.50	..... .50	..... 1.00
July .....	10.00 12.00	10.75 11.25	— .75 .75	..... 2.00
August .....	9.00 10.00	10.00 10.50	—1.00 —.50	..... 1.00
September .....	8.50 9.00	8.25 8.75	.25 .25	..... .75
October .....	8.50 9.00	8.50 9.50	..... —.50	..... 1.00
November .....	8.50 9.00	8.50 9.50	..... —.50	..... 1.00
December .....	8.50 9.00	8.50 9.50	— .. —.50	..... 1.00
1878.				
January .....	8.50 9.00	8.50 9.50	..... .50	..... 1.00
February .....	7.75 9.00	8.00 8.50	— .25 .50	..... 1.25
March .....	7.75 9.00	8.00 8.50	— .25 .50	..... 1.25
April .....	7.75 9.00	8.00 8.50	— .25 .50	..... 1.25
May .....	7.50 8.75	7.75 8.25	— .25 .50	..... 1.25
June .....	7.25 8.50	7.50 8.00	— .25 .50	..... 1.25
July .....	6.50 7.75	7.00 7.50	— .50 .25	..... 1.25
August .....	6.75 7.00	6.75 7.25	..... —.25	..... .50
September .....	7.25 8.00	7.25 7.75	..... .25	..... .75
October .....	7.00 8.00	7.25 7.75	— .25 .25	..... 1.00
November .....	7.00 8.00	7.25 7.75	— .25 .25	..... 1.00
December .....	7.00 8.00	7.25 7.75	— .25 .25	..... 1.00
1879				
January .....	7.00 8.00	7.25 7.75	— .25 .25	..... 1.00
February .....	7.00 8.00	7.25 8.00	— .25 .....	..... 1.00
March .....	7.00 8.00	7.25 8.00	— .25 .....	..... 1.00
April .....	7.00 8.00	7.25 8.00	— .25 .....	..... 1.00
May .....	7.00 8.00	7.25 7.75	— .25 .25	..... 1.00
June .....	7.25 8.25	7.25 7.75	..... .50	..... 1.00
July .....	7.25 8.25	7.25 7.75	..... .50	..... 1.00
August .....	7.25 8.25	7.25 7.75	..... .50	..... 1.00
September .....	7.25 8.25	7.25 7.75	..... .50	..... 1.00
October .....	7.50 8.50	7.50 8.00	..... .50	..... 1.00
November .....	8.00 9.00	8.00 8.50	..... .50	..... 1.00
December .....	8.00 9.00	8.00 8.50	..... .50	..... 1.00

TABLE XI.—*Continued.*

The prices at Buffalo, N. Y., 1875-1888, of New Process Flour manufactured in the West (Minnesota), Compared with the Prices of the same kind of Flour manufactured in Buffalo.

Month and Day of Comparison.	Selling Prices of				Excess in price of		Variation in value of new process flour.
	Western made flour.		Buffalo made flour.		Western over Buffalo flour.		
1880.							
January .....	\$8.50	@9.50	\$8.25	@9.00	.25	.50	1.25
February .....	8.00	9.00	7.75	8.25	.25	.75	1.25
March .....	7.75	8.75	7.75	8.25	.....	.50	1.00
April .....	7.50	8.50	7.75	8.25	— .25	.25	1.00
May .....	7.50	8.25	7.25	7.75	.25	.50	1.00
June .....	7.50	8.25	7.25	7.75	.25	.50	1.00
July .....	7.50	9.25	7.25	7.75	.25	.50	1.00
August .....	7.50	8.25	7.25	7.75	.25	.50	1.00
September .....	7.75	8.75	7.75	8.25	.....	.50	1.00
October .....	7.75	8.75	7.50	8.00	.25	.75	1.25
November .....	7.50	8.25	7.50	8.00	.....	.25	1.25
December .....	7.75	8.50	8.00	8.50	.25	.....	1.25
1881.							
January .....	7.50	8.25	7.75	8.25	— .25	.....	.75
February .....	7.25	8.00	7.50	8.00	— .25	.....	.75
March .....	7.25	8.00	7.50	8.00	— .25	.....	.75
April .....	7.50	8.25	7.75	8.25	— .25	.....	.75
May .....	7.50	8.25	7.75	8.25	— .25	.....	.75
June .....	7.50	9.00	7.75	8.25	— .25	.75	1.50
July .....	7.50	9.00	7.25	8.25	.25	.75	1.75
August .....	7.50	9.00	7.00	7.50	.50	1.50	2.00
September .....	8.00	9.50	7.75	8.25	.25	1.25	2.25
October .....	8.75	9.75	8.50	9.25	.25	.50	1.25
November .....	8.50	9.50	8.25	9.00	.25	.50	1.25
December .....	.....	.....	.....	.....	.....	.....	.....
1882.							
January .....	8.25	9.25	8.00	8.75	.25	.50	1.25
February .....	8.25	9.25	8.00	8.75	.25	.50	1.25
March .....	8.25	9.25	8.00	8.75	.25	.50	1.25
April .....	8.25	9.25	8.25	8.75	.....	.50	1.00
May .....	8.75	9.25	8.75	9.25	.....	.....	.50
June .....	8.75	9.50	9.00	9.50	— .25	.75	.75
July .....	8.25	9.00	8.50	9.00	— .25	.75	.75
August .....	8.25	9.00	8.50	9.00	— .25	.75	.75
September .....	7.75	8.75	7.75	8.25	.....	.50	1.00
October .....	7.75	9.00	7.75	8.25	.....	.75	1.25
November .....	7.50	8.00	7.50	8.00	.....	.....	.50
December .....	7.50	8.00	7.50	8.00	.....	.....	.50
1883.							
January .....	7.50	8.00	7.00	8.00	.50	.....	1.00
February .....	7.75	8.25	7.25	7.75	.50	.50	1.00
March .....	8.25	8.75	7.75	8.25	.50	.50	1.00
April .....	8.25	8.75	7.75	8.25	.50	.50	1.00
May .....	7.75	8.25	7.50	8.00	.25	.25	.75
June .....	7.50	8.00	7.25	7.50	.25	.50	.75
July .....	7.50	8.00	7.25	7.50	.25	.50	.75
August .....	7.00	7.50	7.25	7.50	— .25	.....	.50
September .....	7.25	7.50	7.50	7.75	— .25	— .25	.50
October .....	7.25	7.50	7.50	7.75	— .25	— .25	.50
November .....	7.25	7.50	7.50	7.75	— .25	— .25	.50
December .....	7.25	7.50	7.50	7.75	— .25	— .25	.50
1884.							
January .....	7.00	7.50	7.00	7.25	.....	.25	.50
February .....	7.00	7.50	7.00	7.25	.....	.25	.50
March .....	7.00	7.50	7.00	7.25	.....	.25	.50
April .....	7.00	7.50	6.75	7.00	.25	.50	.75
May .....	6.75	7.25	6.75	7.00	.....	.25	.50
June .....	6.75	7.25	6.75	7.00	.....	.25	.50
July .....	6.50	7.00	6.50	6.75	.....	.25	.50
August .....	6.50	7.00	6.50	7.00	.....	.....	.50
September .....	6.25	6.75	6.25	6.75	.....	.....	.50
October .....	6.25	6.75	6.25	6.75	.....	.....	.50
November .....	6.00	6.50	6.00	6.50	.....	.....	.50
December .....	5.50	5.75	5.50	.....	.....	.....	.25

TABLE XI.—Continued.

The Prices at Buffalo, N. Y., 1875-1888, of New Process Flour manufactured in the West (Minnesota), Compared with the Prices of the same kind of Flour manufactured in Buffalo.

Month and day of Comparison.	Selling prices of				Excess in price of Western over Buffalo flour	Variation in values of new process flour.
	Western made flour.		Buffalo made flour.			
1885.						
January.....	\$5.75	@ 6.00	\$5.50	@ .....	.25	\$ .50
February.....	6.25	6.50	6.00	.....	.25	.50
March.....	5.75	6.00	5.75	.....	.....	.25
April.....	5.75	6.00	5.75	.....	.....	.25
May.....	6.50	7.25	6.50	\$6.75	.50	.75
June.....	5.75	6.50	5.75	6.00	.50	.75
July.....	5.75	6.50	5.75	6.00	.50	.75
August.....	5.75	6.50	5.75	6.00	.50	.75
September.....	5.50	6.25	5.75	6.00	— .25	.75
October.....	5.50	6.25	5.75	6.00	— .25	.75
November.....	6.00	6.50	6.00	6.50	.....	.50
December.....	6.00	6.50	6.00	6.50	.....	.50
1886.						
January.....	6.00	6.50	6.00	6.50	.....	.50
February.....	6.00	6.50	6.00	6.50	.....	.50
March.....	5.50	6.00	5.50	6.00	.....	.50
April.....	5.50	6.00	5.50	6.00	.....	.50
May.....	5.00	5.50	5.50	6.00	— .50 — .50	1.00
June.....	5.00	5.50	5.50	6.00	— .50 — .50	1.00
July.....	5.00	5.50	5.25	5.75	— .25 — .25	.75
August.....	5.25	5.75	5.25	5.75	.....	.50
September.....	5.25	5.75	5.25	5.75	.....	.50
October.....	5.25	5.75	5.25	5.75	.....	.50
November.....	4.75	5.25	5.00	5.50	— .25 — .25	.75
December.....	4.75	5.25	5.00	5.50	— .25 — .25	.75
1887.						
January.....	5.25	5.75	5.25	5.75	.....	.50
February.....	5.25	5.75	5.25	5.75	.....	.50
March.....	5.25	5.75	5.25	5.75	.....	.50
April.....	5.25	5.75	5.25	5.75	.....	.50
May.....	5.25	5.75	5.25	5.75	.....	.50
June.....	5.25	5.75	5.25	5.75	.....	.50
July.....	5.25	5.75	5.25	5.75	.....	.50
August.....	5.25	5.75	5.25	5.75	.....	.50
September.....	5.25	5.75	5.25	5.75	.....	.50
October.....	4.75	5.00	5.25	5.75	— .50 — .75	1.00
November.....	4.75	5.00	5.00	5.25	— .25 — .25	.50
December.....	5.25	5.50	5.50	5.75	— .25 — .25	.50
1888.						
January.....	5.25	5.50	5.25	5.50	.....	.25
February.....	5.25	5.50	5.25	5.50	.....	.25
March.....	5.25	5.50	5.25	5.50	.....	.25
April.....	5.00	5.25	5.00	5.25	.....	.25
May.....	5.00	5.25	5.00	5.25	.....	.25
June.....	5.25	5.50	5.25	5.50	.....	.25
July.....	5.00	5.25	5.00	5.25	.....	.25
August.....	5.00	5.25	5.00	5.25	.....	.25
September.....	5.75	6.00	5.75	6.00	.....	.25
October.....	7.50	7.75	7.50	7.75	.....	.25
November.....	8.00	8.25	8.00	8.25	.....	.25
December.....	7.25	7.50	7.25	7.50	.....	.25



TABLE XII.

\* Quantity of wheat produced and of wheat and wheat flour imported, exported and retained for consumption in the United States from 1869 to 1890, inclusive. [From statistical abstract of the United States.]

Calendar Year.	Production. Bushels.	Year End'd June 30.	Imports. Bushels.	Total Pro- duction and Imports. Bushels.	Exports. Domestic and Foreign Bushels.	Retained for Home Consumpt'n Bushels.	Con- sump- tion per capita. Bus.
1869	260,146,900	1870	1,285,976	261,432,876	54,411,735	207,021,141	5.37
1870	235,884,700	1871	867,489	236,752,189	53,068,920	183,683,269	4.64
1871	230,722,400	1872	2,410,738	233,133,138	39,997,265	193,135,873	4.76
1872	249,997,100	1873	1,841,049	251,838,149	52,545,731	199,292,418	4.78
1873	281,254,700	1874	2,116,777	283,371,477	92,534,779	190,836,698	4.46
1874	309,102,700	1875	367,987	309,470,687	73,212,614	236,258,073	5.38
1875	292,136,000	1876	1,664,138	293,800,138	76,171,643	217,628,495	4.82
1876	289,356,500	1877	366,061	289,722,561	57,513,589	232,208,972	5.01
1877	364,134,146	1878	1,390,713	365,584,859	93,419,031	272,165,828	5.71
1878	420,122,400	1879	2,068,018	422,190,418	149,508,553	272,681,865	5.58
1879	448,756,630	1880	456,106	449,242,736	180,934,478	268,308,258	5.35
1880	498,549,868	1881	211,402	498,761,270	186,475,251	312,286,019	6.09
1881	383,280,090	1882	865,467	384,145,557	122,597,997	258,547,560	4.93
1882	504,185,470	1883	1,087,011	505,272,481	148,785,696	356,486,785	6.64
1883	421,086,160	1884	32,474	421,118,634	111,636,302	309,482,332	5.64
1884	512,765,000	1885	212,311	512,977,311	132,851,835	380,124,376	6.77
1885	357,112,000	1886	388,415	357,500,415	94,913,395	262,587,020	4.57
1886	457,218,000	1887	282,400	457,500,400	154,163,415	303,336,985	5.17
1887	456,329,000	1888	593,860	456,922,860	120,127,664	336,795,196	5.62
1888	415,868,000	1889	135,851	416,003,851	88,822,462	327,181,389	5.34
1889	490,560,000	1890	162,546	490,722,546	109,611,176	381,111,370	6.09
1890	399,262,000	1891	583,827	399,845,827	106,801,935	293,080,684	4.58

TABLE XIII.

Estimated Annual Product, Acreage and Value of the Wheat Crop in Minnesota and the Dakotas from 1867 to 1891, inclusive, from the Annual Reports of the Department of Agriculture.

YEAR.	MINNESOTA.			DAKOTAS.		
	Acreage.	Production.	Home Value.	Acreage.	Production.	Home Value.
	Acres.	Bushels.	Dollars.	Acres.	Bushels.	Dollars.
1867	800,000	10,000,000	14,800,000	a	a	a
1868	966,366	14,500,000	12,035,000	a	a	a
1869	1,165,644	19,000,000	11,210,000	a	a	a
1870	1,057,078	16,022,000	13,298,260	a	a	a
1871	1,092,363	12,016,000	12,016,000	a	a	a
1872	1,406,060	23,200,000	19,256,000	a	a	a
1873	1,533,115	28,056,000	22,444,800	a	a	a
1874	1,592,388	21,338,000	14,936,600	a	a	a
1875	1,600,000	27,200,000	23,392,000	a	a	a
1876	1,882,352	16,000,000	14,400,000	a	a	a
1877	1,801,316	33,324,346	30,325,154	a	a	a
1878	2,402,000	28,824,000	14,700,240	a	a	a
1879	2,592,400	31,886,520	29,973,329	a	a	a
1880	3,060,280	40,395,696	35,144,256	a	a	a
1881	3,152,100	35,952,000	38,109,120	a	a	a
1882	2,547,000	23,030,500	27,085,010	720,000	11,460,000	9,168,000
1883	2,597,940	33,773,200	27,018,560	1,008,000	16,128,000	11,612,160
1884	2,753,816	41,307,000	20,653,500	1,540,200	22,330,000	10,271,800
1885	3,084,274	34,285,000	23,999,500	2,187,084	27,913,000	17,585,190
1886	3,067,851	42,856,000	26,142,160	2,675,350	30,704,000	15,968,080
1887	3,129,208	36,299,000	21,416,410	3,664,737	52,406,000	27,251,120
1888	3,097,916	27,881,000	25,650,520	3,921,269	38,036,000	34,612,760
1889	3,113,406	45,456,000	30,455,338	4,431,034	41,652,000	24,991,032
1890	3,143,917	38,356,000	31,068,187	4,209,482	40,411,000	28,287,719
1891	3,143,917	55,333,000	43,159,692	4,882,157	81,819,000	57,868,074

a Not given.

## CHAPTER II.

## TOLL, OR THE MILLER'S COMPENSATION FOR MAKING FLOUR.

In the introductory has been briefly sketched a few of the many changes which have taken place in the past centuries in the methods and machinery by which grain is manufactured into meal or flour. In the first chapter reference was made and facts given showing how some of these changes affected the food supply and its cost and the manner of living among the masses of the American people. But the cost of this nation's food supply, as well as that for the civilized world, has been affected in the last hundred years by a multitude of other factors as well as by the inventions and discoveries in the milling business. The introduction of the railway and the steamship, the growth of great cities, and a thousand other modern innovations, have aided in completely revolutionizing the organization of society and the methods of conducting nearly all enterprises. These innovations have modified the food supply of the world and its cost even more than the inventions in the milling business already referred to. Some of these modifications have been gains for all concerned and others have, with such gains, been the cause of incidental and small losses to particular classes. It is not, however, the purpose of this chapter to investigate these gains and losses save as they affect the flour milling business, and with it the cost of wheat to the producer and of flour to the consumer.

In the days of Homer, and later in those of Cæsar, flour was everywhere worth the value of the wheat which was consumed in its production and the added value of the labor required in its manufacture. There was no third factor in the problem. Wheat and the labor of the mill slave were the only factors entering into the cost or price of the flour. To be sure, the hand mill or quern, used in the making of the flour, cost money or labor, and yet that cost was so small relatively that it was never counted in the expenses of the operation. With the introduction of mills, driven by water power or by the wind, other elements of cost began to be included in the price of flour. After the adoption of such mills, flour required, for its production, the labor of the miller or of his associates, as before, it had called for the toil of the slaves who operated the quern or hand mill. In addition it necessitated the aid of the mill wright and all the various craftsmen who assisted in the erection of the mill or the construction of its machinery. The services of these artisans were indirectly included in the charges of the miller for converting the grain into meal or flour. Interest on investment, the expenditures for repairs

improvements, insurance, and taxes all, after a time, had to be considered by the miller as well as the amount paid to his workmen or claimed by himself as wages in the business. These additional elements, entering into the cost of flour, were, however, less in value than the wages of the human labor saved by the introduction of mechanical power for the grinding of grain. The price of flour was lessened therefore to the consumer by this first introduction of improved or labor saving machinery in its manufacture. The charges of the miller, including an allowance for the interest on his investment, repairs, etc., was less than the wages of the manual labor called for by the earlier methods. But while interest, repairs, etc., began to be factors in the cost of flour with the introduction of the first power mill, yet, for practical purposes, all these added minor factors were and are grouped with the labor of the miller under one head as the miller's charges. The cost of the flour then could be divided, as at first, into two general factors, the price of the wheat at the place of its manufacture and the charges of the miller for his services.

For centuries after the introduction of the power mill the great majority of people carried their wheat to the mill and had it ground and carried the flour home themselves. So long as this condition of affairs continued there could be but the two elements or factors mentioned in the selling price or value of flour, the cost or value of the wheat and the charges of the miller for his services, in grinding the same. In those days the miller was a mechanic but not a trader in any sense of the term. His charges, the profits of his business, arose from the mechanical work performed by himself or under his supervision.

Modern times have seen a great departure from that primitive condition of the milling business. Great cities have arisen and the people, busy at their regular tasks, can not attend to the buying of wheat or trading with the miller. They want flour ready made and delivered at their door. Instead of each man taking his bag of wheat to the mill as of yore, and carrying home his resulting flour in the same receptacle, the modern man in the cities and towns receives his flour in bags or barrels prepared specially for the purpose. The cost of these bags or barrels, which the man of to-day purchases with his flour, is as large as the expense for changing their contents from wheat into the flour which is desired. The maker of the bags or barrels has then, at the present, as much to do in fixing the price of a quantity of flour as has the miller. Here, then, is the introduction of a new element or factor in the price or value of flour to the consumer. But this cost of the package, in which it is delivered, is not the only nor even the greatest addition to the price of flour to the average man who uses it in the latter part of this century.

The people cannot go to the mill and bring thence their flour as of yore. They must have it brought to their door and with the least possible bother on their part. This is a modern



social requirement and with its growth the world has seen slowly develop a system by which the grocers carry the flour made by the miller to the houses of their patrons. This delivery of flour was no part of the ordinary duties of the miller of long ago. But this delivery costs money and the purchaser finds the expense of the same included in the price of the flour as well as the value of the wheat, the charge of the miller, and the pay of the bag or barrel maker. Here are two new elements added to the ancient cost of flour to the consumer. There is yet a third. It is the cost of soliciting trade for the millers and of transporting the flour from his mill or store-house to the store of the retail grocer. This, which may be called the expense of jobbing or wholesaling flour, is a considerable factor. It is as large as the cost of manufacturing flour in some of the most improved mills, and, like the cost of the barrel or the pay of the grocer for his trouble, must all be included in the selling price of the flour and paid for by the consumer.

In the price of flour, two or five centuries ago, there was included only the value of the wheat in the locality of the mill and the charges of the miller for grinding. To these have been added, as the result of the changes briefly outlined above, for the great majority of people, three additional factors of expense, the cost of a package in which to deliver it, the cost of advertising and wholesaling it, and the expense of its final sale and delivery by the retail grocer or other dealer. As a rule, these added factors of expense are separated almost wholly from the office of the miller. This is true of all the flour manufactured in the northwest and finally consumed in the east or in Europe. But in his place of residence the miller to-day often sells his flour at retail to his fellow townsmen. In that case he performs, in addition to his traditional office of miller, the modern function of a trader. The price charged for his goods includes the pay for this added service as well as his recompense as miller proper.

A half century ago society almost everywhere saw different consumers of flour obtaining it from the miller at different rates. The man purchasing it for cash or on credit had to pay the miller the price of the retail grocer. That price, fifty years ago, as to-day, included all the five factors which have just been detailed at length. The man thus purchasing flour outright paid for all these diverse expenses and charges no matter of whom he made his purchase. The miller's trade with the grocer had already begun to be an important item in his business. That trade was growing and the miller, to protect it, retailed his flour on the same terms as the grocer. But while the miller, selling for cash, asked the same price as did the grocer, he traded with the farmer on a different basis. The latter carried his wheat to the mill and in return obtained all the flour which could be made therefrom. He paid the miller for his services a small compensation in grain or in money. He paid for no

packages, since he returned home with his flour in the bags in which he had brought his wheat. The cash or wheat toll was based upon the laws or usages of an earlier time, before the sale of flour by retail dealers of any description. To the farmer, then, the cost of the flour was, as had been the case to his ancestor centuries before, the value of his wheat and the added pay for the services of the miller.

This different cost of flour to the wheat raising farmer, from what was paid for the same article by all others, continued in all parts of the United States until after the introduction of the modern milling process within the past twenty-five years. In that process, it takes so long for wheat to be changed into flour, it has to undergo so many processes and pass through so many different machines that it is very difficult to take any small lot of grain from the farmer and try to return to him the resulting flour as in the earlier days. Then it has been found that for the production of the best flour the average wheat must be mixed with other grain to some extent. The farmer demands the best flour, and will buy of the good modern mill rather than patronize the old one with its inferior flour. Under these circumstances the miller, with the improved modern appliances in his establishment, is more and more demanding and receiving from the farmers the same prices for his flour which is paid by the other purchasers thereof. Up to the introduction of the new process in milling the farmer had obtained his flour on better terms than any of the other members of the community. With that introduction the old arrangement began to come to an end. It is maintained in only a small portion of the towns of the country. The farmer loses his advantage in the prices which he has to pay for this great staple food product. The modern milling inventions thus become a leveling agent, bringing down the farmer from his ancient position of pre-eminence, and placing him in the purchase of flour on the same footing with the day laborer, the clerk or the artisan. In this respect, at least, they are the source of a loss to the wheat grower.

The first form of power mills to be erected was that still in use in some parts of the world, one of which was shown in figure 8, and given under the designation of "a Norse mill of Shetland." Such mills were at first generally erected by a number of farmers associating together, or they were built by the parish or township. Each farmer who patronized the mill was in turn his own miller. Each managed it while his grain was being ground. Under that primitive arrangement the farmer was the only person engaged in the business or enterprise of flour making. He raised the wheat and ground it into flour. But with improvements in milling machinery the average farmer lacked the skill to manage the same. Trained mechanics were needed to make and keep the apparatus in order. Again, the improved mills cost money, and the farmers did not have it to invest. The occupation of the miller became thus separated from that of the farmer, and the miller and the farmer became equal but distinct partners, as it were, in the enterprise of fur-

nishing the community with flour. The charges of the miller for grinding, as those of the farmer for raising the wheat, entered into the selling price of the flour.

It required time to develop this special class of millers in society and separate their work entirely from that of the farmer. The separation early became complete in thickly settled and progressive communities. And yet the old arrangement still lingers in the last half of the nineteenth century in sparsely settled and non-progressive communities. In the same way it required time to give the retail and wholesale grocers and the bag and barrel makers a standing in the business of furnishing a hungry world with food. With the growth of towns and the development of a large class of flour consumers, apart from the wheat producers, the millers began to sell their flour. They started in the flour selling business as the farmers operating such a mill, as shown in figure eight, began the milling business. But with the continued growth of towns and cities came the necessity for the retail grocer. By degrees, in these cities, the work of making and of retailing flour became separated, as previously the farmer had ceased to be his own miller. The grocer then becomes a third partner with the farmer and the miller in furnishing flour to society. Other changes admit the bag and barrel maker and the wholesale grocer or jobber likewise into the enterprise. To be sure, in some of the smaller towns, the miller still sells a part or the whole of his flour at retail. In such towns the function of the miller and trader, such as are found in the large cities, are not separated. The tendency, however, can everywhere be traced to dissociate the miller from the trader as have previously been separated, the raising and the grinding of grain.

The student of social questions, in reviewing such changes in the methods of supplying the world with food, always inquires how they have affected the cost and the manner of living among the great masses. The cost of making and handling flour can be traced in the past along many lines, among which is that by a study of the legislation for the regulation of toll or the miller's charge for grinding grain. A review of that legislation also affords much light upon the growth of the milling business. Legislation, for the regulation of toll in England, was originally more local than general. The local authorities, as the justices of the peace, established the millers' toll and wages of all classes of labor. This exercise of local authority explains the few references to the subject in the acts of the British Parliament. The first and the only act of Parliament upon the subject, before the year 1796, was in the reign of Henry III, Edward I, or Edward II, the lawyers are unable to tell which. It must have been not far from the year 1300. That old law was as follows:

"The toll of a mill shall be according to the custom of the land and the strength of the water course, either to the twentieth, or the four and twentieth corn. (2). And the measure



whereby the toll shall be taken shall be agreeable to the King's measure, and toll shall be taken by the rase and not by the heap or cantel. (3). And in case that the fermors (farmers) find the necessaries, they shall take nothing besides their due toll, and if they shall they shall be grievously punished."

"The custom of the land and the strength of the water course" were the two factors that the law admitted as modifying the tolls mentioned. In other words, the tolls for grinding were, by this old law, to be determined by the common sense rule of an equitable return for the work given. The miller on a small stream, who labored under many difficulties, was allowed to charge a higher toll than the one who had a steady and valuable mill power. The early settlers in the American colonies, and later in the western states, were guided in their legislation by the principles of this old law. Thus Delaware, two hundred years ago, allowed a larger toll in some counties than in others. The difference was due to the relative patronage of the mills in the newer and older settlements. South Carolina gave the miller a larger toll for a small than for a large grist. Some of the colonies allowed a larger toll for a mill driven by wind power than for one propelled by water. So, later, the states in the west generally provided one toll for a mill driven by water and allowed the man who ground by horse power to take double the toll of the former case. In some way all states and territories have striven by legislation to allow for the extra work of bolting flour and for the varying task of grinding different grains.

Under the general law of A. D. 1300, the English long continued to regulate the millers' toll. The early settlers in America brought with them to the new world the principle of regulating that toll. In establishing it they took account of the circumstances of the settlers as much as the early law allowed in England for "the local customs and the strength of the water course." Agriculture, in Virginia and the southern colonies, gave the planter a larger return for his labors than was realized by the farmers of New England. Each colony measured the recompense of the miller by that of the farmer, and the legislator of the south therefore voted the miller twice the toll which was allowed by the law-makers of Massachusetts and her neighboring colonies. Life in New England for the tiller of the soil was, for a long time, a severe struggle. Under their local laws and regulations the miller had to be content with as small a return for his toil as was realized by the farmer. At first there were no mills in the colonies. The people prepared their flour in mortars, such as were in use in the earliest times and shown in figure two, or by other rude and primitive devices shown in the other cuts in the introductory. The first mill in Massachusetts Bay was erected in Dorchester, on the Neponsett River, in 1623. Two years later the legislature passed the law regulating the toll, and forbade the miller to take a toll greater than one-sixteenth. In the following

year (1636) permission was granted for the erection of the first mill in the Plymouth colony. The language of that permit was as follows:

"It is concluded upon by the Court that Mr. John Jenny shall have liberty to erect a mill for grinding and beating of corne upon the brooke in Plymouth, to be to him and his heirs forever; and shall have a pottle (two quarts) of corne tolle upon every bushell for grinding the same for the space of the first two years after the said milne is erected, and afterwards but a quart at a bushell for all that is brought to the milne by others, but if he fetch it and grind it himself or by his servant then to have a pottle tolle for every bushell as before."

This toll of one part in thirty-two evidently proved too small, for we find the same court, in 1638, allowing the miller at Scituate to take a toll of one-sixteenth, and thereafter that seems to be the only rate referred to in the early statutes of New England.

While the early settlers of New England, with unanimity fixed upon one-sixteenth as the proper toll, the early settlers of Virginia were more liberal with the miller. This, as previously mentioned, was, without question, due to the fact that they were realizing large returns from their tobacco and other crops and must needs give the miller as good a chance for money making as they themselves possessed. The first law of that colony was passed in 1645 and was expressed in the following words:

"To rectifie the great abuse of millers, be it enacted that no person or persons shall for grinding any grain that shall be brought to them take above the sixth part thereof for toll." For the violation of the foregoing law a penalty of 1,000 pounds of tobacco was provided by the legislature of 1657. In 1670 the law was changed and the toll was fixed at one-eighth for grinding wheat and for Indian corn one-sixth as before. The other southern colonies had laws for the regulation of toll based upon the legislation of Virginia, as the other New England colonies followed those of Massachusetts, already referred to.

Of the original thirteen colonies New York and Pennsylvania alone have at no time, either as colonies or as states, passed laws for the regulation of toll. Penn, in his colony and many of the Dutch Patroons of New York and other large land owners in the two colonies, erected mills in the settlements in which they were interested. The existence of these mills and the low rates of toll which they exacted were held out as inducements for settlers to buy their lands. These land owners, under the special grants from the crown, had control of all mill privileges in their territory. They erected mills of their own and permitted others to erect mills as Penn did in Pennsylvania, but only on condition that the owner of the new mill should not charge any higher toll than was taken at the proprietor's mill. The language of the special permits and the fact that we cannot find, in those colonies, the enactment of

any laws about toll or even a demand for such legislation, is good proof that the fees of the early millers in that part of the new world were fairly satisfactory to settlers.

Again, many of the towns of those two colonies, at an early date, received charters making them corporations. Under those charters those towns, as Huntington, on Long Island, and many others, erected their own mills and then sold them, gave them away or leased them under circumstances which fixed by contract the charge of the miller for his services. These tolls, thus established, varied with the amount of work to be had for the mill and kindred circumstances from one-fourth to one-sixteenth. This local variation in the tolls of New York and Pennsylvania can be traced for over a century. As the country became more fully settled the principle of competition began to be felt, and one-tenth became the almost universal toll taken by the millers in all parts of those states.

This was the toll which was later established by law in Delaware, New Jersey and Ohio. It is worth while, in passing, to note that this toll of one-tenth was like the geographical situation of the states in which it prevailed about midway between the legal tolls of New England and of the southern states.

In the settlement of the west and northwest the pay of the millers allowed by law was copied after the legislation of the south and not after the meager compensation of New England. Two factors aided in the matter. These states were carved out from the old northwest territory which, in the beginning, belonged to Virginia. The law of Virginia about mills was adopted by the earliest of these new territories soon after the revolutionary war. This was in Kentucky. Another fact which assisted in making the toll of the west one eighth instead of one-sixteenth was the great fertility of the west. The farmer easily made a crop of grain and he readily consented that the miller should have a liberal compensation for his services. In early England one factor shaping the different tolls collected was, as has been noted in connection with the law of the fourteenth century, the "strength of the water course." In the new world this does not appear to have been a determining factor to any great extent. "The strength or fertility of the land" was the great determining factor. The farmer of the south profited by the sunny skies of his section and the large return which nature gave for his labors. The settler in the new west did the same. The adjustment of toll on a more liberal scale here than in the less fertile or genial New England may be taken as an illustration of the equity on which at last all charges of the miller and other workers must be adjusted. The old laws regulated the partnership of the farmer and the miller in furnishing the world with flour. In establishing the miller's toll for the various states law-makers strove to base their statutes upon the equity which considered all things involved, "the strength of streams," the fertility of the soil, the wages of labor, and all else which, in the special lo-



cality, modified the mutual earnings of men. This same basis of consideration must, in this generation, be kept in mind in passing judgment on the relative recompense of the farmer, miller, grocer, and others for their services in providing the public with flour. Equal service should, in each case, receive, as it is entitled to, equal recompense, and each class of workers should rejoice in the other's prosperity.

It is interesting, in this connection, to trace this general equity in the past by comparing the tolls paid in the several colonies with the wages paid therein for services of various kinds. In New England toll was established by law at one-sixteenth of the wheat ground. In New York, without law, custom established that toll at one-tenth. But wages in the two places approximately corresponded with these two different tariffs for grinding grain. Thus we read (*Economic and Social History of New England*, Weeden, page 400,) that in the year 1690, common laborers, in Massachusetts, earned two shillings a day when they boarded themselves. In New York, at the same time, they received from two shillings and three pence to three shillings a day. Skilled handicraftsmen, at the same time, received, in the former place, three shillings a day, and five shillings in the latter. The miller in New York received one-half more for his services than his fellow flour-maker in New England, because he and all others received and paid one-half larger wages for all classes of skilled labor. In another place will be given the wages and prices of wheat and other commodities at various times and at various places in the past in contrast with the present. Thus will be shown how, in the past, the miller's toll was regulated by wages—the earning capacity of the people.

In the past the price of all services and commodities were quite generally compared with that of wheat. The pay of the miller was thus regulated by the price of that staple commodity, since that pay consisted of a certain part of the wheat ground by him. Judged by that standard of the past society has to pay the miller far more for his services in flour making than formerly. The legal toll in Minnesota is one-eighth of the wheat. This gives the miller twice the compensation, measured in wheat, that was given for the two centuries in New England. But with the introduction of the new process of flour-making the law about toll in the state has become, for all cities and large towns, practically obsolete. The cause of this has been explained. The farmer in those places sells his wheat to the miller or grain dealer for cash and buys his flour of the grocer in the same way. He may do this or he may exchange his wheat for the miller's flour direct on the basis of the cash value of each. In making such an exchange the farmer who brings his wheat to Minneapolis, in the year 1892, must, in purchasing a barrel of the best flour, give in return, of No. 1 hard wheat, enough grain for the miller to make therefrom one and a half barrels of flour. In other Minnesota towns the terms of exchange vary exceedingly. In some places, as

may be noted from the accompanying tables, the legal toll is exacted only. In others, the charge for grinding varies all the way from one-eighth to the one-third at Minneapolis. The rate of exchange may also vary from time to time in the same town as it has in Minneapolis in the past few years. The general public, in speaking of the difference in the amount of wheat required to purchase a barrel of flour and the quantity used by the miller in its manufacture, call that difference the pay for the services of the miller in the business of supplying the world with flour. That difference actually includes many other factors, as has been previously explained. But for the purpose of ready comparison and reference it may still be spoken of under that designation. In the old days, in New England, when the miller's toll was one-sixteenth, his charge for grinding a given quantity of grain was one-fifteenth. In the same way, in the year 1800, in England, where the toll was one-twenty-fourth, the charge for grinding was one-twenty-third of the grain ground.

To-day that charge, as shown by the facts stated above, is, in the larger cities of Minnesota, substantially one-half. The farmer for his flour-making has then to pay to-day, in some places in Minnesota, seven and one-half times as much as his predecessor in New England in the days of Salem Witchcraft, and eleven and one-half times as much as the Englishman in the days of the Black Prince. What compensation, if any, has the years brought to him in return for this enormous increase in his expenditures for flour-making, when that expenditure is judged by legal tolls and the rate of exchange between wheat and flour?

In answering this question we must first see if there is any other or better method of comparison, and thus ascertain if the farmer has lost as much in his flour purchases as is shown by the exhibit already presented. The product of the mill has improved in the centuries, and more as well as better flour is obtained from any given amount and grade of wheat than formerly. Account of this improvement must be taken before the balance is finally posted in the account between the miller and the farmer. We must learn how many bushels of wheat the farmer had to carry to the mill to secure a barrel of flour, as well as know, as above stated, what portion of the grain brought to him the miller retained for his work of grinding. The cost to the farmer of the service purchased is measured by what he brings home as well as by what the miller retains. Weeden, in his *Economic and Social History of New England*, (page 332,) quotes Pynchon as saying that in Hadley, Conn., one bushel of spring wheat made about 34 pounds of good flour. To secure for himself a barrel of flour, besides paying the miller for grinding the same, the farmer, according to this statement or estimate, took to the mill about 6.2 bushels of grain, two hundred years ago. The same authority tells us, on the same page, that this flour sold in Hadley for from 11 to

12 shillings for 112 pounds, according to its quality, and that the price of such flour was two shillings higher in Hartford. At Hadley at that time the price of spring wheat was three shillings a bushel. The two statements do not exactly agree, and show that the first statement was a general estimate of the flour obtained from a bushel of grain. The latter, giving the selling price of flour, furnishes, with the price of the wheat, the best basis of comparison. Comparing, then, the price of flour and wheat in that old New England town, it becomes apparent that it then required from 6.4 to seven bushels of wheat to buy a barrel of flour, to purchase the best flour requiring larger quantity. Taking this standard of efficiency of the old mills let us now see how it compares with the work of mills of Minnesota.

In November, 1892, the best number one hard wheat, at one time, sold in Minneapolis for seventy cents. At that time the selling price of the best patent flour at retail in the grocery stores of that city was \$4.80. For the farmer to purchase a barrel of that flour he would be obliged to give in exchange, at the current prices, 6.85 bushels of his number one hard wheat. Allowing for the daily fluctuations of the market this is found to be approximately the amount of wheat which the farmer in Hadley would have given in exchange for a barrel of flour two hundred years before, when the legal toll was established by law at one-sixteenth. Nominally the millers charges to-day, are, as shown above, seven and one-half times as great as formerly. And yet, as a matter of fact, the farmer secures a like quantity of a greatly improved flour in return for the same amount of wheat. This is due to the improvement in the processes of milling which have been introduced in the past two centuries. More flour is made from the same wheat as well as better than formerly. The value of this increased flour product approximately corresponds to the cost of all the added services to the public introduced into the business of supplying the people with flour. It pays for all that is done by the three new partners which have been introduced into the enterprise, the bag and barrel maker, the retail and wholesale grocer. The increase in toll, or the rate of exchange between wheat and flour, to seven and one-half times its former proportions, does not then impose upon the farmer any added cost for the making or grinding of his grain. This comparison is made upon the basis of the present relative prices of wheat and flour in the cities of Minneapolis, Duluth and other important centres of the wheat and flour trade of the State. But in many of the smaller towns, as shown by the tables A to D, at the close of this chapter, the farmer of Minnesota still has his wheat ground for a smaller charge. He receives his flour from the miller without paying for the services of the bag or barrel maker, or without paying any one for his services as a retail dealer apart from the miller. The average of the small mills gives from 39 to 40 pounds of flour for a bushel of good wheat. Some few give more and some



less. The farmer who receives this amount of flour for his wheat secures a barrel of flour for about five bushels of his grain. This is a gain of thirty per cent. over the farmer of Hadley, Conn., two centuries ago. The saving effected by the new processes invented in the two hundred years suffice to pay for the work of the bag and barrel maker and that of the grocer as well. The foregoing conclusion is based upon a comparison of the present milling charges and achievements with those of the past when they are alike measured by the standard of a bushel of wheat. But wheat is not the main nor even the most important standard or measure of service or value. The service rendered by the miller and the grocers and bag and barrel makers consists of labor expended by these persons and their assistants. We measure the amount of that labor in day's work. A day's work is for most purposes a better standard for measuring the cost of different services to the public at different periods of time than is a bushel of wheat or an ounce of gold or silver. How long did the day laborer or mechanic toil to purchase a barrel of flour or pay the miller for grinding the same 200 years ago, and how long does his successor, in the same occupations, labor to secure the same desirable objects or services? This must be the final test of all exchanges of wheat and flour by the different classes of society.

Weeden, in his *Economic and Social History of New England*, tells us that when wheat sold for from four to five shillings a bushel, the best laborers received, for a day's toil, 18 pence when they boarded themselves, and ten pence with board. The skilled mechanic received, at the same time, two shillings a day when he boarded himself, and 14 pence with board. Then, as we have seen, it required about seven bushels of wheat to purchase a barrel of the best flour. With the legal toll at one-sixteenth it needed seven-fifteenths of a bushel to pay for the grinding of that flour. The best day laborers in Minneapolis, in 1892, received \$1.75 a day, and the average of such toilers earn about \$1.50. Skilled mechanics, according to occupation, earn from \$2.50 to \$5.00 a day. Flour sells at \$4.80 a barrel, while the price of the best wheat is 70 cents a bushel. To make that barrel of flour the miller requires a little less than 4.5 bushels of the wheat. The cost of grinding and retailing the flour, including the millers' profit, is about \$1.50 or 2.25 bushels of wheat. If now the various prices and values of flour and wheat are expressed, in terms of days' toil, we have the following comparisons of the value of flour and the millers' services at the present and in the past.

It would cost the New England farmer or laborer for grinding the wheat, to make a barrel of flour, from 1.24 to 1.56 day's toil. The same service costs the laborer in Minneapolis to-day from 1.00 to 1.50 day's labor. There is here no appreciable difference to be noted in the expense of this service in flour-making. In general terms it may be said that, measured by the labor which they give in exchange therefor, it costs the

farmer and the laborer substantially the same to have grain changed into flour now as two centuries ago. This conclusion, based upon the comparison of the purchasing power of wages, agrees with the one previously given wherein the bushel of wheat was taken as the standard of value. The farmer or the laborer, paying for turning their grain into flour, give substantially the same as two hundred years ago. The change of the centuries is found, not in the amount of wheat or toil required to recompense the miller, but in the increased and improved miller's service which that wheat or toil will purchase, as has already been stated in detail in another connection.

For a skilled mechanic in New England, two hundred years ago, the grinding of a barrel of flour was the equivalent of 0.93 to 1.17 day's toil. The same service is worth, in Minneapolis to-day, about one-half as much, or from one-half to three-quarters of a day's labor. Here is a positive gain with no accompanying losses. It is a gain, however, which applies to only one part of the community,—its skilled mechanics.

But while only one class of labor has profited by the change in the relative expense of the millers charges for grinding and delivering flour, the figures, for the cost of the flour itself, including the value of the wheat used in its manufacture, reveals a different situation. A barrel of flour cost the laborer of 1650 from 18.66 to 23.37 day's toil. The same is purchased by the laborer in Minnesota for from 3.00 to 4.50 day's services. This is only one-sixth of its earlier price. The skilled mechanic, in the earlier days, toiled to secure that barrel of flour from 14.0 to 17.50 days, while now he gives in exchange therefor only one and a half to two and a half day's labor. That is, he now purchases the flour, delivered at his door, for the recompense formerly asked him by the miller for merely grinding it. His bill for bread, when paid in labor, is only about one-tenth as large as was the charge for this staple commodity two hundred years ago. The reduction for the mechanic in his flour bill is five times as much as the decrease in the charge of the miller for grinding the same.

The foregoing comparisons would not be complete were no reference made to the cost of flour and the pay of the millers' services in the time of Edward I. in England, when the toll was from one-twenty-fourth to one-twentieth of the corn according "to the strength of the water course and the custom of the land." The best authority upon wages and prices in agriculture at that time is Thorold Rogers. He tells us that the price of a quarter of wheat (eight bushels) was, on an average, from A. D. 260 to 1540, 280 years, five shillings and 11.25 pence, or about nine pence a bushel. The highest price for ordinary farm labor, about the year 1300, was paid at or near Oxford. A man then in harvest time received two pence a day. To earn a bushel of wheat he would have to toil four and a half days. At the same time a laborer at Oxford received for a year's serv-

ice 35 shillings and 8 pence, or the equivalent of about 64 bushels of wheat. Allowing for Sundays and holidays this would have been a bushel for every five days.

The foregoing were the highest wages paid about the year 1300 in agricultural England. In sections away from Oxford and London the laborer toiled longer to earn a bushel of wheat—probably six days on an average. A careful study of these wages gives us the undoubted meaning of the first clause in the old statute for the regulation of toll passed in those days. That statute fixed the toll at one part in twenty, or one in twenty-four according “to the custom of the land and the strength of the water-course.” “The custom of the land” doubtless refers to the varying wages paid for labor. At Oxford and London, where the wages were such as have been given, the miller was allowed to take one part in twenty for grinding the grain brought to him. But where the wages were “by custom” much lower, he should not take to exceed one part in twenty-four. A laborer at Oxford, having his grain ground at the toll of one in twenty, would toil a day for the pay of the miller in grinding 4.2 bushels, and at the toll of one twenty-fourth would toil a day to pay the miller for grinding 5.6 bushels. In those days the flour was not bolted. Doubtless the same amount of nourishment was obtained by the workman then out of five bushels of ground wheat as now out of a barrel of flour. From that standpoint it is found that the laborer of six hundred years ago gave approximately the same amount of labor in exchange for grinding his wheat as now he does for grinding, bolting, and delivery at his door. To compare the work and pay of the miller at that time and in New England four centuries later, after the introduction of bolting, we may note the following. To grind in the days of King Edward I. seven bushels of wheat, the amount required in early New England to make a barrel of flour, would cost from 1.5 to 1.8 day’s toil of the common field hand. The lower amount would be on the basis of the toll of one part in twenty-four. It was approximately the highest cost for the same service in New England four centuries later. It varies but little from the compensation paid by his fellow therefore in this nineteenth century in Minnesota. Here, then, is no change in the situation for seven centuries only as the man of to-day has more and better service in return for his expenditure of labor. The change in toll has varied with “the custom of the land” relating to wages. The rate of toll has advanced with the added wages secured for the average laborer. The change in toll in this period of seven hundred years, passed in review, measures the increase which has been made in the wages of the average workman. It, however, does not tell us anything about the relative purchasing power of those wages then and now. That is determined by the other facts about wages and prices heretofore given. The purchase of a bushel of wheat in England, in the reign of Edward I, called for five days’ toil. That was the best paid labor of the time. Many, if not the most of the people, were compelled to work early



and late for six days to earn that amount of grain. To secure five bushels, cracked or ground in the mills of the period, but not bolted, called in return for from twenty-five to thirty days' services in the field. This is from seven to twelve times as long as would be demanded of his fellow in Minnesota to earn a barrel of the best flour that was ever made in the world. This ratio, between the cost from 600 years ago and now, measures the improvement in the purchasing power of the earnings of the average toilers in the new northwest as compared with the same in the "Merrie England" of legend and romance. It also measures the increased productive power of the farm. It shows how the farm laborer, in the valley of the Red River of the north, can now raise by his labors at least 12 times as much wheat as his fellow six centuries ago. This change, in the productive power of the farm, this decrease in the expenditure of human muscle in the production of wheat, is due to the application of machinery and the introduction of improved methods of husbandry. The farmer and the agricultural implement maker should have all the credit for this decrease in the cost of wheat and other food products made therefrom.

In his field the miller has made as great progress as the farmer. A description of the leading improvements in the milling industry was given in the introductory. The miller's toll has been used to measure the advance in the purchasing power of the wages of the artisan and the laborer, and to show the success of the farmer in cheapening the staple food products of Europe and America. That toll itself, the miller's charges for grinding and delivering flour to the consumers, will now be examined to learn how the progress of the miller's art compares with these other lines of advance passed in review.

The cost of manufacturing and retailing a barrel of flour in Minnesota varies, at the present time, from about \$1.40 to \$1.65, including the profit of the miller. That cost is made up of a vast number of small charges which, however, may be summarized under the following heads and sub-heads.

## MILLERS CHARGES PROPER:

Labor.....	7 to 13 cents
Other mill expenses.....	5 to 9 cents
Repairs, etc.....	3 to 6 cents
Improvements, additions, etc.....	0 to 3 cents
General expenses.....	4 to 9 cents
<hr/>	
Total milling charges proper.....	19 to 40 cents
Packages.....	16 to 35 cents
Wholesaling or jobbing.....	12 to 30 cents
Retailing by grocer.....	60 to 60 cents
Miller's profit.....	35 to 10 cents
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Grand total.....	\$1.40 to \$1.65

In the foregoing schedule or analysis of the miller's charges of the present the item of "labor" is placed first. The amount paid for such labor makes up about one-third of the miller's charges proper, the cost of manufacturing the flour apart from the expenses of selling and the profit of the miller. When

measured by the cost of labor the profit of the various mills is seen to vary exceedingly. A similar variation of this character has been found in the management of mills in all ages. It is instructive to place the general facts about modern mills above given in contrast with the same so far as known concerning the mills of the past.

The first fact about those ancient mills to be noted is their cost of construction. Rogers, in his history of English agriculture, gives details concerning this for quite a number of mills erected in the twelfth and thirteenth centuries. At that time the best stones for grist-mills were imported from Paris, in France. They cost, when delivered at the mill, from four to five pounds sterling. The water wheels cost from three shillings and four pence to eight shillings and four pence. The carpenter's charges for erecting and arranging the machinery of the mills varied, in the cases cited, from three pounds to a small amount over four pounds. This would make the total cost of constructing and equipping the mill, 600 years ago, from seven and one-eighth to ten and one-half pounds sterling. As the purchasing power of money has changed with the centuries this cost can best be expressed when stated in other terms. That cost of the mill of the thirteenth century was the equivalent of the earnings of a common laborer for a period of from four to eight years. The yearly charges for repairs varied greatly with the location of the mill. They were doubtless the equivalent of the annual earnings of from one to two or two and one-half laborers.

Such a mill, as these expenditures would have secured six hundred years ago, would have been a superior one of its kind. It would have been a better establishment than the one shown in figure eight of an old Norse mill of Shetland. It would have been able to grind from 25 to 50 bushels of grain a day. It would have received for this service a toll of from one to two and a half bushels of wheat according to the "strength of the water course" and the amount of the toll collected. This toll would have been the equivalent of the daily earnings of the average laborer for from five to twelve and a half days. Deducting the labor of the miller one day and the cost of repairs, etc., from one to two and a half days, we have, as the daily net income of the mill owner, the equivalent of from three to nine days labor of the mill hand. The profit of the miller would therefore be from three to nine times the expense of labor. The net annual income of the miller from his plant would have been from 50 to 100 per cent. of his investment. When that profit is compared with that of the modern miller the following changes and want of changes are to be noted. Compared with his investments the profit of the modern miller is less than that of his ancient predecessor. Comparing it with the wages required to operate the mill and it was six hundred years ago about as at the present time. There were then as now the same extreme variations due to local causes and to the economy of administration and the wisdom of management. Mills are

far more efficient than of old, but labor costs about the same relatively as in the most ancient period. This fact is due to the greatly increased wages given to the mill hand as to all other classes of labor.

In 600 years the wages of the mill operatives have advanced from 15 to 100 times according to the character of the work performed. The average workman, with any knowledge of milling, receives three bushels of wheat for a day's work, and the head millers many times as much. The pay of this worker varies with the size of the mill and his individual skill in the business. This increase in wages is nearly all paid from the savings effected and the improvements made in milling, as can be seen by comparing the present cost of labor with the ancient tolls of one part in 10, 16, 20, 24, or the ancient profit of the miller as given above.

A portion of this added wages of the mill hands is met by the saving in labor effected by the introduction of the inventions of Oliver Evans mentioned in chapter one. By other inventions various minor and trifling savings in labor have been made. The aggregate of many such inventions make a large saving of this kind. The greatest achievement in milling has, however, consisted in so perfecting the processes as to increase the amount and quality of flour obtained from a given quantity of grain. In 200 years the amount of grain required to make a barrel of flour has been lessened from seven bushels to less than four and a half. Here is a saving equal to one-half of all the wheat consumed in the production of flour. This saving is the one out of which is paid a part of the increased wages of the mill hand, and all the cost of bags and barrels and of delivering the flour to the door of the consumer.

Modern mill inventions are not all essentially labor saving devices as were those of Mr. Evans. They are wheat and flour savers. This saving has been effected in many ways. One out of many may be mentioned. Thirty years ago the waste in milling, the amount of grain used in milling which did not reappear in the saleable products of the mill was, in the mills of Minnesota, about seven per cent. In the best mills this is now less than one per cent.

To reduce waste and loss in other directions, to improve the quality and quantity of flour produced, calls for a constant outlay of money in repairs and the purchase of new machinery. The cost of these improvements, repairs, and additions becomes, in the best mills, the cause of larger expenditures than the wages of labor. This is an outlay unknown to the past and yet it is by just such expenditures repeated for a long period of time that the manual labor in flour making has been reduced, the quantity and quality of flour improved, and the wages of the mill hand increased. When the new process of milling was introduced there was manufactured a small quantity of very nice flour which was sold at a large price. It was purchased almost exclusively by the rich. The larger amount of the grain was used to make a lower grade of flour for the masses.



The ceaseless progress in the business is illustrated by the fact that most of the flour of to-day is of the best. This is shown by the following percentages of the various grades of flour manufactured at various dates by one of the largest mills in Minnesota:

	1872	1881	1884	1892
Patent.....	25	59	63	72
Bakers.....	not given	35	30	21
Low Grade.....	not given	6	7	7
Total .....	100	100	100	100

Under "Other Mill Expenses" are included the cost of power, insurance, taxes, interest, and some kindred expenditures. The sum of these is nearly as large as the sums paid for wages. The same is true of "general expenses." The latter includes the cost of superintendence, all salaries of clerks, etc. In the smaller mills this is less relatively than in the larger establishments, but the cost of labor is larger, and so the saving in the one is offset with an increase in the other. It should be noted that the difference in the amount of "mill charges" given in the two columns is twice the amount set down as the profit of some millers. In fact the foregoing exhibit may be taken as an illustration of the source of most of the profit realized by the average mills and the best ones of to-day. The best mills reduce the cost of labor, general expenses, and the cost of wholesaling or jobbing to a minimum. The saving effected in these three items includes or measures all the difference which exists between the profits of the best paying establishments and their unsuccessful competitors. The savings secured under these three heads, and the gain made by them in the quality of their flour which causes it to sell a few cents on a barrel above the price of that made by their competitors, includes all the profit in the modern mill. The tendency of the centuries is to reduce that profit as it is to decrease the cost of labor in any manufactured article.

Seven hundred years ago the miller's toll was one-twentieth or one-twenty-fourth. That toll, Rogers tells us, made the miller a sort of local aristocrat. It gave him an income several times greater than the farmer or the skilled mechanic. Hence, the public continually found fault with his charges and his excessive profit. All history abounds with this complaint against the miller. The analysis of his profits already given shows that the popular fault finding was not altogether without reason. From one-half to three-fourths of his toll must have been profit, after paying for the labor and all other charges. Compared with the capital invested this is several times the gain made by any mill in Minnesota in the latter part of this nineteenth century.

Of the profits of milling in the early American colonies we have exact details in a number of cases. Thus Sharf and Westcott, in their history of Philadelphia, (page 140), in speaking of the old historic "Swede Mill" of South Amboy, says that some one, in the year 1685, made the following

statement: "It is estimated of a horse mill that it would clear the owner 100 pounds sterling a year, the toll for grinding a "Scotch Bell," six bushels of Indian corn being two shillings, equal to one bushel in every four and a half." Such a simple horse mill could not have cost one-half the sum which is here set down as its net profit in a single year. Of the wages at Philadelphia at that time we are told nothing. The same author quoted above tells us, on another page, that only a few years later a man of some abilities earned yearly between 16 and 20 pounds in Pennsylvania currency. In other words, the net earnings of a mill costing not to exceed fifty pounds, and requiring the labor of one man to operate it, was equal to twice the capital invested and from five to six times the wages of the labor required to operate the same. These horse mills received more toll than the power mills, usually two or three times, but the average profit in the one must have been not far from the other. That profit must have been larger, measured by the labor cost of flour making, than is realized in any mill in Minnesota, and, in comparison with capital invested, greatly exceeds what is anywhere realized at present.

The cost of packages in the schedule of the charges of the modern miller is set down as varying from 16 to 35 cents. When the flour is sold in sacks the cost of the package is about 16 cents or thereabouts. The cost of a barrel is 35 cents. The labor of the stave, hoop and barrel makers, or even of the bag makers, is of more importance in the price of flour than the labor of the workmen in the flour mill. Then it should be further noted that the two items of "wholesaling and retailing" make up over one-half of the sum total of the charges included in the work of changing wheat into flour and delivering it to the consumer. If a business man can devise a method of reducing the expenditure for these services he can do more than may be accomplished in any other way for lessening what is known as the millers' toll, or his charges for furnishing the public with the material for bread making.

Once everything connected with the mill was regulated by law. The people found it even more necessary to compel the miller by statute and legal penalties to make good flour, to keep his mill in good order, etc., than to limit his legal toll. The world stopped legislating about the quality of flour to be obtained by the miller before they did about tolls. The millers who made the best flour obtained the business and made the most money. The present wholesale flour trade of Minnesota was established by its millers making, in the years 1871-1875, a better flour than was elsewhere produced out of any grain in the United States. As a result they made marvelous profits for a time. This extra profit of the early Minnesota millers everywhere aided in the next twenty years in the improvements of methods of flour manufacture thus it ever will be. The money to be made out of good flour, and the loss which follows poor milling, is a more potent factor in securing



efficient service than all the laws which could be enacted. We don't need, at present, such laws as the following one passed in the Plymouth colony:

"And whereas, there are divers other millers within this colony who are allowed competent toll for grinding, and do not grind as they ought to do; it is enacted by the court that such millers shall either grind their corn sufficiently, or else that upon complaint to the court thereof and the thing proved the miller shall for every such default pay 6d for every bushel to the party grieved, and 6d to the treasurer for the colony's use."

Competition will suffice to regulate the making of good flour. Do not the facts about toll in all ages show that the subject of the miller's charges and the pay of the butcher and the grocer can, within certain lines, be left to the undisturbed laws of trade? New York and Pennsylvania, without any laws upon the subject, succeeded as well as any of the early colonies. The toll there adjusted itself without statutes to the current wages of the section, and that was all which the other colonies were able to do with their statutes and penalties. England, which passed its first general law concerning toll about the year 1300, and which tried all the power of local courts, abandoned the effort for regulation about a century ago. In 1796 a law was passed which contained many provisions about correct weight and the like, but makes the question of miller's toll a matter of free contract between the miller and his patron. The one essential requirement of the law being that he shall keep posted in his mill the terms on which he will grind for cash or for toll. Can this age improve very much upon that law of a century ago in England?

In tables A, B, C and D are presented exhibits of the present millers' charges in the smaller towns and cities of Minnesota. A few of those millers still grind for a toll or payment in grain. There were 45 of such mills reported to the Bureau. The charges of those mills are shown in table A. Twenty-six of these mills grind for the legal toll of one-eighth. Ten more practically do the same thing, grinding for tolls of one part in seven or for a toll of six and a half, seven, seven and a half or eight pounds of wheat for grinding a bushel thereof. One mill reports a toll of from one-fourth to one third and one of eighteen pounds for a bushel of wheat. Both of these are substantially the equivalent of the cost of grinding and delivering as given in the preceding pages for the city of Minneapolis.

In table B is shown the charges in cash of 37 different mills in Minnesota. Their cash charges for grinding a bushel of wheat vary from eight to fifteen cents. In two cases those cash charges are based upon and vary with the price of wheat.

In table C is shown, for 68 mills, the terms on which the mills exchange flour alone for wheat. One mill reports that it gives 47 pounds of flour for a bushel of wheat. The amount of such flour is sometimes as low as 20 pounds and for the same mill varies from 20 to 36 pounds according to the quality of the wheat and the grade of flour given in the exchange.



In table D is presented the rates of exchange in 98 Minnesota mills where flour, shorts and bran are given in exchange for wheat. The table begins with three mills giving for a bushel of wheat 36 pounds of flour, from six to seven pounds of shorts and from 9 to 13 pounds of bran. The list exhibits a wide variation in the terms of exchange.

TABLE A.

Showing the number of mills in Minnesota which still grind for "toll" and giving for each mill the rate of toll:

No. of Mills.	Rate of Toll.
26.....	One-eighth of the wheat ground.
3.....	One-seventh of the wheat ground.
3.....	One-sixth of the wheat ground.
1.....	From one-fourth to one-third of the wheat ground.
1.....	Six and one-half lbs. of wheat for grinding a bushel of same.
2.....	Seven pounds of wheat for grinding a bushel of same.
3.....	Seven and one-half lbs. of wheat for grinding a bushel of same.
2.....	Eight pounds of wheat for grinding a bushel of same.
2.....	Ten pounds of wheat for grinding a bushel of same.
1.....	Twelve pounds of wheat for grinding a bushel of same.
1.....	Eighteen pounds of wheat for grinding a bushel of same.

TABLE B.

Showing the number of mills in Minnesota which grind wheat for cash, and giving for each mill the amount charged for grinding a bushel of wheat:

No. of mills.	Cash charges for grinding a bushel of wheat.
9.....	Fifteen cents.
14.....	Ten cents.
5.....	Twelve and one-half cents.
4.....	Twelve cents.
3.....	Nine cents.
2.....	Eight cents.
1.....	One-fifth the value of the wheat.
1.....	One-fourth the value of the wheat.

TABLE C.

Showing the number of pounds of flour given by the mills of Minnesota in exchange for a bushel of wheat, and also giving the number of mills adopting each of the stated rates of exchange:

NUMBER OF MILLS.	POUNDS OF FLOUR.	NUMBER OF MILLS.	POUNDS OF FLOUR.
19	36	1	24-42
14	37	1	32-36
9	35	1	32-45
8	38	1	32-38
2	39	1	34-36
1	40	1	34-38
1	41	1	34-35
2	42	1	35-40
1	47	1	27-35
1	20-36	1	37-39

TABLE D.

Showing number of pounds of flour, shorts and bran given by the mills of Minnesota in exchange for a bushel of wheat, giving also the number of mills adopting each of the stated rates of exchange:

NUMBER OF MILLS.	POUNDS OF FLOUR.	POUNDS OF SHORTS.	POUNDS OF BRAN.
3	36	6- 7	9-13
16	35	3-10	5-15
22	34	2- 5	6-15
12	33	3- 8	8-14
7	32	4- 5	6-10
1	31	6	9
1	25-35	4	8
1	30-35	5- 6	10-12
1	30-34	4	6
1	30-40	3	8
1	30-36	4	9
1	24-38	4-15	8-15
1	15-33	3- 4	9-13
1	32-36	5	10
1	32-34	3- 4	11
1	33-34	4	10

## PART III.

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### TRADE UNIONS.

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#### INTRODUCTORY.

The nineteenth century may be called the age of organization, combination and association. Each year beholds capitalists uniting their wealth for the accomplishment of some profitable undertaking which they individually are powerless to carry to successful issue. Men unite for all sorts of purposes. Labor unions do not in the least differ in their essential characteristics from these other organizations. They are combinations of laboring men who seek by union, by associated action, to secure what their members acting alone are powerless to attain. Their justification or condemnation must depend alone upon the results achieved. They must be judged by the same standards which the world applies to corporations of capital and associations of philanthropists. A bank justifies its existence when it secures to its stockholders or depositors a higher average rate of interest with greater security, other things being considered, than they could realize if banks were not in operation. So with corporations for manufacturing, transportation or for trading.

Now, as associations of capitalists, with their aggregation of wealth seek thus to give to their partners and stockholders greater incomes than they could individually secure, so labor organizations seek to obtain for their members higher wages, greater personal independence of action, freedom from irksome restrictions or regulations, and similar desirable ends. Labor Unions are, then, what Thorold Rogers, the English economic and social writer, calls them,—industrial partnerships. Their organization and development in this century runs parallel with those of corporations of capital. Many grave social and economic questions have been suggested, both by the growth of corporate wealth and the development of these industrial partnerships; the concentration of money in stock companies and trusts and the union of great numbers of workmen in one organization. The investigation, whose conclusions are given in these pages, was not directed with a view of an-



swering more than a few of those questions. It has sought to learn if the modern trade unions of America secure the objects of their aims relatively as fully as banks, railroads and other moneyed companies realize the ends for which they were incorporated. It has inquired if these trade unions manage their affairs as economically as do the moneyed institutions with which they may justly be compared, or with which they compete in any department of their work. The American trade unions, with very few exceptions, invite the closest scrutiny of their management and have no facts about their finances which they seek to keep from the public. The officers, general and local, of all the unions, whose affairs are here passed in review, have given all possible facilities asked for in the investigation of their business and other affairs. Some unions have established a better system of book keeping than others, and hence are able more readily to furnish the accurate and complete data desired. A comparison of many trade union reports, of a recent and remote date, give evidence that American organizations of labor, as a whole, are constantly progressing in their system of transacting business and their methods of keeping accounts. The leading unions each year make their official reports with greater care and with fuller details than at first. The oldest unions have developed systems of account and methods of book-keeping for their affairs which, for perfection and adaptability to the ends to be accomplished, are not excelled in any class of mercantile and manufacturing establishments. This is especially true of the older railway organizations and the cigarmakers and some others. The general economy of the administration of these unions is exhibited in the following pages. The exhibits presented showing the financial management of these unions speak volumes in praise of the same. They show how the toilers of the land, who are banded together in these labor unions, secure the ends aimed at in their organizations in almost every case with greater economy of management expenses than any business corporation with which they can legitimately be compared. They do this notwithstanding the fact that they are working of necessity in a field full of difficulties and embarrassments. This relative economy of administrative expenses is the only fact about these several organizations that can be fully ascertained in the case of all the unions investigated. The accounts and data secured from some of the unions furnish the basis for a judgment upon other subjects. Thus, in the statements about some unions, we learn how fully the tendency of their organization is to put an end to strikes and to advance the material, moral and social well being of their members. This data is wanting in the case of many unions, but all the facts secured are full of encouragement for the student of social questions and for all who work for or believe in the progress of mankind, and the success of republican institutions, the government of a people by the people.

The success of trade unions along any line is an augury of great import to the people of the land. This, for the simple reason, that such unions or industrial partnerships are little republics by themselves. They are bodies of men seeking to regulate their common affairs relating to wages, hours of toil, etc., by the vote of all who are interested. Some of these unions have carried the idea of self-government to its utmost extreme. Their officers are but clerks, as all questions of importance are referred to the members themselves for decision. A review of the affairs of trade unions then becomes at once a study of the successes and failures of labor organizations, and of the probable final success or failure of our American system of popular self-government. The question before all others in the governmental world at the present time is this: Can the people be trusted to govern themselves? The study of trade unionism presents this fundamental question in another form. Can the members of any craft or body of laboring men manage their affairs as well as the rich or privileged or educated would do it for them? If the failures of these unions are more common and prominent than their successes, then there is no reasonable ground for a belief in the ultimate success of popular self-government. On the other hand, if they make a success of their affairs equal to that found among organizations in the commercial and business world, then out of the experience of these unions can men justly frame an argument for the future of republican institutions. The test for trade unions, as for that of our system of self-government, is found in a comparison of the things accomplished under the direction of the many and under the guidance of the few.

Under the application of the above mentioned test, as applied in these pages, the American trades unions justify their existence. They demonstrate their value to their members. They show that they are a factor for good in society and are deserving of the same recognition before the law as any organization of capital. The successes of trade unions chronicled in this report demonstrate that the working people of our land do not need a guardian. They can be trusted to manage their own affairs and make of their trade organizations a final success. It is true that organized workmen make mistakes and failures, as do bodies of organized capitalists and students. Thus, there have been many labor unions started in the United States which have come to naught through bad management, visionary schemes, dishonest or incompetent officers and other causes. The local organizations which have thus been wrecked are literally legion in number. But these mistakes and failures are no more a valid argument against trade unions than against insurance companies, banks and other business corporations. Over three-fourths of the standard investment life insurance companies started in the United States have gone out of business, and over nine-tenths of mutual or assessment companies have come to naught. The failures of trade unions do not approximate these figures in their magnitude. Neither do



they relatively equal the failures of banks and moneyed corporations. When insurance companies or banks fail, no one cries out against those useful institutions. Rather, men try to profit by past experience, and in the future avoid the causes that had led to previous shipwreck of financial undertakings. The law is adjusted with a view of giving the capitalist the opportunity of rising above past mistakes, and, upon them as a foundation, building prosperous and successful institutions. But the workmen should be as free to correct their mistakes and those of their fellows as are the capitalists. This because the largest possible freedom of action is the best possible corrective of transient errors and mistakes. This is true of the business man and it applies with equal force to the great body of wage earners. To have this freedom of action they should be protected in their moral right of free association, subject only to regulations identical in character to those which control the organizations of capitalists.

Capitalists are free to join or not to join any proposed association for money making. Working people should have at all times and in all places the same right. No employer should be permitted to require his workmen to sign a contract binding themselves not to join a labor organization while in his service. Such contracts practically limit the workman's right of free association and organization with his fellows. They make use of his necessities to force him to relinquish what should be one of the dearest privileges of every free man. The great argument which, in almost every state of the Union, has led to the adoption of the Australian or secret ballot, is that it enables the working man to vote untrammled. His vote should not be cast from fear or favor of the employer. The employer should have the right to cast one ballot and no more. The principle underlying recent legislation for purity of elections should apply to the right of all to unite as they please in societies and organizations of all kinds. The employer should have the right to determine for himself what organizations, corporations or associations he should join or refrain therefrom. He should not be permitted to go further and say what societies his workmen shall support with their money and their energies. The right of free association, as that of free ballot, lies at the base of republican institutions, and should be guarded with the same jealous care by the law-maker. No private individual, firm or corporation should be permitted to make laws to abridge this right on the part of his employes. And yet many corporations and individuals thus limit the rights of their workers and usurp for them the functions of the law-makers.

Possibly, yes probably, the future will see the organization of trade unions regulated by law as now are regulated all forms of corporations in which capital is interested. But when necessity for such legislation arises, the state and not the private person or moneyed corporation should be the law-maker.



From freedom of association has come for capital in this century possibilities of accumulation undreamed of by preceding ages. Out of the same freedom has come for philanthropists a great forward movement in human helpfulness. Out of this freedom of association has come to an ever-widening number of people an education in all that makes man self-reliant and independent. Such associations train the workingman as they do the banker and the man of business in a respect for the rights of others. They also teach men their own rights and aid them in the enforcement of the same. They educate them in all the qualities which assist in securing success in life. They also train men in all the arts and practices of self-government on which rests the perpetuity of our republican institutions. To question or abridge the workingman's right to unite with his fellows for industrial purposes is thus an attack upon the basal principles of our government. It is an effort to subvert the workingman's right to govern himself. That effort is seen in the action of some employers who seek, by so-called "iron clad contracts" and other allied measures, to keep their workmen from joining labor organizations.

Such contracts are, in the modern world, a survival of the ancient but not yet outgrown "cast spirit" which assumes that one part of society is by nature unfitted for regulating its own affairs, and that it is just for the employer to regulate his workmen's affairs for the advancement of his interests but not for that of theirs. The effort to introduce and enforce these "iron clad contracts" is based, it is true, upon the employer's moral and legal right of hiring and discharging men as the needs or exigencies of his business require. It adds, however, to that right the unjust assumption that in such matters the employe has no rights which the employer is bound to respect. Those contracts, in this way, reassert in a form the most odious possible to the workingmen, the medieval assumption, that the wage earners, as a whole, have no right to a voice in establishing the rates of wages and in deciding other questions in which the employer and employe are alike interested.

It is because of this assumption that these contracts are at once so subversive of republican ideas of government and so hateful to all members of labor organizations. The trade unions are organized upon the assumption the very opposite of the foregoing. It is that in making labor contracts or in terminating them; in establishing or changing the rules which govern the employes in any occupation; in regulating wages, hours and terms of service, etc., etc., the wage earners are entitled to an equal voice with their employers, and that such voice can only be secured by the establishment and recognition of unions among all the workers interested. Not only do the unions assume that the wage earners ought thus to have equal rights with their employers, they seek, by all practicable means, to enforce the same. In the reports of the several unions, here passed in review, some unions will be found, as

those in the building trades, which, at present, are striving to force the adoption of an eight-hour work day upon the industrial world. Others, as the printers and allied crafts, make their great fight over the rules and regulations for the government of their calling. The "iron clad contracts" are introduced by some employers as one means of resisting the efforts of the unions to put their principles in practice. With reference to those principles, some employers talk and feel exactly as the old nobility did centuries ago when the proposition was first broached for giving some share in the direction of government to others besides themselves. They urge that business would become impossible under the conditions proposed. They claim that the man who puts money into a business must have absolute or complete control over every detail thereof. Only thus, in their opinion, can business success be achieved. Thus, the nobility once argued with reference to state affairs, but the centuries have seen in the political world the millions given an equal voice with the most privileged. The rich man and the educated, the man of character and standing, has not lost by admitting the millions to equal political partnership with himself. Rather, he has gained much by the changes. So the believer in trade union principles argues it will be when an employer on the one side and his employes as a body on the other have equal voice in the settlement of all subjects in which they are equally interested.

Thus is found everywhere to-day one party who believe that blessings will follow the introduction of trade union principles, and another which see in these principles the enunciation of ideas subversive of all success in the industrial world. In arguing against these principles some men think that they have stated a reason for rejecting them when they call them socialistic. The principles of the union would, if introduced, create, it is true, a new condition of society, but that fact is of itself no argument either for or against their adoption. No one can tell how far those principles will ever be realized in practice in the future. The practical man never bothers himself about the possibilities of an indefinite future. He is not in the prophecy business for such long spaces of time ahead of him. The possibilities, in the industrial world a hundred years from now, are as much unknown as our present form of government was to Henry VIII. Of the future, in the industrial world, only this can be said with any certainty. If a practical way is found for giving the wage earners an equal voice in industrial matters with their employer, the dream of the trade unionist will be realized, otherwise not. Present legislation about labor, the mutual rights of employers and employes, should not be guided by individual fancies about the possibilities of the future. No bill should be favored or opposed because it may be called socialistic by friend or foe. So-called labor legislation is intimately associated with and has great effect for good or ill upon the business prosperity of rich and poor. That legislation should be shaped, in a large degree, by the practices and usages of the



best and most progressive employers and employes in our midst. It should seek to compel all others to do what even now the well meaning do without law. Practically, this is all that any labor legislation has or ever will accomplish for good. Framed upon any other basis it always has and always will work more mischief than benefit.

The foregoing principle may be applied in a thousand ways to the solution of modern problems and the attitude of the state towards labor organizations. Only one application of it will be made. It is this: The best employers in our midst, the men who have the fewest industrial disputes and quarrels, those who raise against themselves the least antagonism among the toilers, uniformly give their men the same right of association which they claim for themselves. The state cannot err in making the standard of practice established by these men the supreme law for all. This is the meaning and scope of the law which has hitherto been asked for by organized labor. It is a statute making it a penal offense for an employer to require his workmen to renounce all connection with labor organizations as the condition of their employment. Only by such a law can the rich man's right of associating for making money, or securing added profit on his capital, be matched by the laboring man's right to associate for advancing his wages and for improving his mental and moral condition. Only thus can the practices of the best employers in our midst be made obligatory upon all.

Such a statute, recognizing the workman's right of free association, is the first practical step towards bringing all labor disputes, as strikes, lockouts and boycotts under the domain of law. It would open the way, also, for ultimately bringing the union, with all its principles and practices, within the control of law in a way similar to those operative in the case of moneyed corporations. Once all disputes between men were settled by the arbitrament of private war. Step by step the old state of society has been done away with and the right of private war wrested from the private individual. With one exception all disputes and quarrels between individuals or associations must be settled by the courts of the land. That one exception is found in disputes between the employer and his employes—disputes in which the labor unions play such an important part. These disputes, leading to strikes and lockouts, are very disastrous to all concerned and to society as a whole. If at last they are to be settled in a peaceful and orderly way by courts of arbitration or other tribunals of the state, instead of as now by private industrial war, the union must be recognized as now the law takes cognizance of the corporations of capital. As the first practical step towards that recognition, and thus towards the realization of an arbitration of all labor troubles, the law above referred to may be urged upon the attention of all.

A law making it a misdemeanor for an employer to forbid his employes joining a labor union embodies the practices and usages of the best employers in our midst. Enforced, it will aid in lessening the present causes for friction in the industrial



world. The methods and practices of business men suggesting such a law also points the way for framing a statute for compelling arbitration of all labor disputes. Many of the unions, passed in review in these pages, have made arbitration the law of their members. No strike can be ordered by them until and unless all possible efforts for arbitrating their disputes have been tried and proved unavailing. In the same way many employers are ever ready to settle all troublesome questions with their workmen by this honorable and just method. Out of the practice of these employers and unions will soon develop a way of compelling the over-reaching and unjust men of all walks of life to abstain from private industrial war and settle their disputes before the courts of the state.

In this report are passed in review only a portion of the trade unions of the State. It was the original intention to present, in this connection, a study of all the national organizations and detailed statistics of all the local unions. The Bureau has not been able to carry out the original intent by reason of want of time. The unions whose financial exhibits are herewith presented are, as a rule, the most important, and their management doubtless fairly represents that of all the others.

#### THE INDUSTRIAL INSURANCE OF TRADE UNIONS.

In the preceding pages of this report it has been mentioned that the American trade unions, in most cases, secure the object of their organization with relatively greater economy of management than the business corporations with which they can legitimately be compared. This conclusion is based upon comparisons between the financial statements of the unions and a large number of business corporations. But a few of those comparisons will be presented in these pages as with minor variations they all repeat the same story. The figures of all the unions investigated will be given for one or a series of years. These figures will be introduced in connection with similar ones for representative business corporations with which they may properly be compared. Those corporations are mainly all engaged in some form of insurance. The figures given for them are all obtained from the reports made by those institutions to the insurance departments of the several states of our Union. A reference to those reports will enable any one readily to extend the comparisons introduced. By such a reference it will be seen how the companies chosen are fairly representative of their several classes.

The first unions, whose financial exhibits are presented, are those which, among their other transactions, pay a small sum at the death of a member or of his wife, one or both, to defray the expenses of funeral or burial. These payments are referred to among the unions as "death or funeral benefits." They are identical in character with those paid by certain life insurance companies in the United States and Great Britain transacting a class of business called "industrial life insurance." By that insurance an effort is made to provide, in the event of the

death of the insured, a small sum, from \$15 up, to pay the expenses of burial for the deceased. These companies and the trade unions, with which they are compared alike, sell life insurance in small amounts, and hence in one respect, at least, are transacting the same class of business.

Industrial insurance, apart from the trade unions, was introduced into the United States about the year 1875, although it had been in use in Great Britain several years prior to that date. At the present time industrial insurance is, in the United States, mostly all written by four companies. In Table A may be found an exhibit of the growth of these four companies, and hence of the business apart from the trade unions from 1878 down to the close of the year 1891. At that time there were in force, in the United States, 4,133,066 policies of this class of insurance. Those policies guaranteed in case of death the immense sum of \$461,084,466, a sum as large as was covered by all the life insurance in the United States at the close of the war of 1865. This vast business, the growth of fifteen years, is an evidence of the esteem in which these death benefits are regarded among the masses of our land. That interest explains one cause of the interest which the wide awake man has in his trade union, if that union is at all progressive and alive to the welfare of its members.

TABLE A.  
The Growth of Industrial Insurance in the United States:

YEAR.	Metropolitan.		Prudential.		John Hancock.		Germania.		Total.	
	No. policies.	Am't insured.	No. policies.	Am't insured.	No. policies.	Am't insured.	No. policies.	Am't insured.	No. policies.	Am't insured.
1879	5,143	\$ 516,618	43,268	\$ 3,864,948	.....	.....	239	\$ 59,025	48,650	\$ 4,440,591
1880	110,193	9,103,570	87,119	7,346,412	30,702	\$3,139,018	7,841	890,463	235,855	20,479,793
1881	190,348	17,694,620	133,248	10,938,546	36,032	3,787,230	7,511	859,992	367,139	33,500,388
1882	116,659	11,698,153	195,706	15,737,711	48,568	5,096,488	5,893	638,455	366,826	33,170,807
1883	562,042	56,536,325	273,917	23,053,935	63,625	6,730,902	13,750	1,472,488	877,354	87,793,650
1884	670,999	71,965,635	324,794	28,545,189	80,629	8,936,611	16,107	1,667,817	1,092,520	111,115,252
1885	829,833	91,434,252	422,671	40,266,445	107,872	12,600,935	16,774	1,836,609	1,377,150	146,138,241
1886	1,066,875	119,590,338	548,433	59,328,627	148,850	17,805,910	16,218	1,736,294	1,780,372	198,431,169
1887	1,345,125	147,750,287	736,909	81,694,088	293,467	23,802,502	11,495	1,274,098	2,296,996	254,530,975
1888	1,632,042	176,533,142	850,064	92,418,854	256,574	24,913,052	9,521	1,067,070	2,748,801	293,962,118
1889	1,849,113	200,829,029	1,090,312	117,357,415	320,264	36,365,419	8,276	947,704	3,267,965	355,500,467
1890	2,096,505	231,115,440	1,228,332	135,084,198	402,147	43,772,709	7,812	905,378	3,734,888	412,878,025
1891	2,278,487	254,939,881	1,360,577	150,759,688	476,612	54,510,514	7,390	868,400	4,123,666	461,084,463



The four companies whose business is summarized in table A insure more than four times as many persons as belong to all the American trade unions. The insurance written by them has been commended by philanthropists and business men. These companies claim, and justly so, that such insurance as they write fosters, among the masses, the habit of providence and leads the insured to provide against the various contingencies of life. Any extension of such or similar insurance is hence a blessing to the nation as well as to the average participant. Any reduction in its cost to the insured means a saving of vast import to all concerned. Any addition to its legitimate cost is a needless additional burden laid upon the wage earners of our land. As a basis of comparing the cost of industrial insurance, as furnished by trade unions and by these four companies shown in the table, there is presented in table B a detailed statement of the receipts and disbursements of the Prudential Insurance Company of New Jersey.

TABLE B.

Receipts and Disbursements of the Prudential Life Insurance Company of New Jersey.

YEAR.	Premium income.	Total income.	Paid policy holders.	Expense of management.	Per cent of total income used for expenses.	Per cent of sums paid policy holders used for expenses.	Per cent premium income paid policy holders.	Average amount insured by each policy.
1882...	\$571,595	\$584,593	\$157,706	\$293,730	50.25	186.25	27.59	\$80.30
1883...	828,911	845,903	222,083	479,982	56.72	220.63	26.79	84.33
1884...	1,127,738	1,156,580	322,382	648,681	56.09	201.21	28.59	87.83
1885...	1,468,956	1,509,663	418,622	821,742	54.43	196.32	23.49	97.52
1886...	2,114,296	2,164,957	593,273	1,193,982	55.38	202.09	28.06	109.95
1887...	2,942,257	3,013,351	853,913	1,678,581	53.78	196.57	29.02	112.03
1888...	3,659,495	3,757,084	1,096,884	1,818,445	48.40	165.79	29.70	110.62
1889...	4,412,833	4,601,298	1,331,323	2,257,955	49.07	160.60	29.97	106.74
1890...	5,636,876	5,821,653	1,754,897	2,879,777	49.46	164.07	31.13	112.99
1891...	6,413,283	6,709,632	2,105,303	2,842,696	42.40	135.02	32.98	115.34
Total	\$29,206,240	\$30,158,714	\$8,856,386	\$14,920,091	49.47	167.33	30.32	\$107.51

## I. CIGAR MAKERS' INTERNATIONAL UNION OF AMERICA.

This union was organized in the year 1864, and had connected with it September 1, 1891, 291 local unions. These unions had, January 1, 1892, 24,221 members in good standing. The international union holds a delegate convention once in two years. Its sessions begin on the fourth Monday of September. The officers of the international, as well as those of the local unions, are elected by the members themselves. The method of electing the officers of the international is very much like that followed in the choice of our state governors or national presidents. Among the cigarmakers, every union

member must vote for officers or pay a fine. This popular election of officers instead of an election by the delegates assembled in convention is an innovation in American trade unions. It marks the cigarmakers as one of the most progressive and democratic labor organizations in the country. Not only do the cigarmakers elect all their officers by vote of all their members, those members also decide all questions of importance connected with the order. All amendments to the constitution or by-laws are submitted to a popular vote. So, also, are all such subjects as the continued support of strikes at any point in the domain of the craft. Thus are submitted the proposed changes in the payment of benefits, the adoption of any new method of conducting trade affairs. The cigarmakers were the first international trade union in America to adopt this *referendum* or decision of all questions of importance by a direct vote of all concerned. This *referendum* has, since its adoption by the cigarmakers, been made use of by several other crafts. The popular election of international officers is an extension of the same principle of popular government. The method of election and the *referendum* mark the cigarmakers as one of the most democratic bodies in existence. In its system of government is to be found the broadest application of the American ideal of the rule of the majority—the regulation of common questions by the vote of all concerned.

In judging such organizations as that of the cigarmakers, as well as in forming a conclusion concerning the worth or success of a business corporation, account must be taken of all the diverse conditions under which any given body labors. Thus, in judging the cigarmakers, it should be borne in mind that they occupy a field in the industrial world the most difficult of all in which to achieve success. Their labor comes constantly into sharp competition with that of the workers in tenement house factories, or "sweating dens." It is also met by the product of the cheap Chinese labor that has found a home in our borders. No other class of American toilers is forced to meet this sharp and peculiar competition to the same extent. The cigarmakers in the tenement houses work long hours at very small compensation. Many of them toil for twelve and fourteen hours and even longer each day. These workers do not belong to the union. They are unorganized. Now, while these unorganized cigarmakers thus labor long hours at a very low compensation for the most part, the members of the international union toil for only eight hours a day. This eight hour work day was secured by them in the year 1886, and has since that time been maintained. The product of their toil is constantly sold in competition with that produced in the sweating dens and by the cheap prison and Chinese labor. This fact must be borne in mind in judging their success in maintaining their eight-hour work day. In another part of this article will be found a table showing the increase of membership of the order in the past few years. That increase marks the ability of a body of men to maintain as well as secure an eight-hour work day at

good wages in the midst of nearly twice their number of men and women working for longer hours and for less compensation. Here is a large gain, which plainly is the result of the organization of the men who enjoy the same. The maintaining of the eight hour day and the scale of wages is a business transaction of great import and financial value to the members of this particular craft. The data is not at hand to measure the exact financial value of this achievement of the cigarmakers. It is, however, great, and, judged by the standards of the commercial world, justifies a much larger outlay than is found to have been expended by the members of this craft for all the purposes of the order.

In addition to maintaining for its members this reduced work day and advancing scale of wages, the Cigarmakers' International Union has raised and distributed each year large sums of money as insurance benefits to its members. It has published a paper for the instruction and information of the craft in the principles and working of the union. It has raised and disbursed money for a number of purposes connected with the interests of organized labor as a whole in the United States, and with the special interests of the cigarmakers. Now, while the success of the union, in maintaining its eight-hour day and union scale of wages, cannot be accurately measured in dollars and cents by reason of the want of the necessary data at command, all the facts about the raising and disbursement of money among the cigarmakers for the above mentioned purposes are readily accessible. By means of them the value of the organization can be accurately determined as an agency for the management of these benefit and other business funds. Its economy of management can be exactly compared with that of well known business corporations selling the public the same class of service. But before that can be done a statement must first be made of the character and amounts of those benefits granted by the Cigarmakers' union to its members.

The insurance benefits of the cigarmakers are five in number. They are known as the strike, sick or disability, death, out-of-work, and traveling benefits. The first of these, the strike benefit, is paid to those members of the union who are out of work by reason of a strike which has been approved by the proper authorities of the organization. This benefit applies to those suffering by lockouts in the same way. Members out of work, from either of the above causes, receive a benefit of \$5 a week for the first sixteen weeks of the labor trouble—after that time the strike allowance is only \$3 a week, and that sum is continued until a settlement of the difficulty or the strike is declared off. The regulations for the giving of this strike fund are all framed so as to make it difficult to have a strike unless the cause is a just one. A strike cannot be supported for any length of time except by vote of the 24,000 members. They secure all the facts in the case by the examination of their paid agents. These agents report the facts of the strike as



they find them, and on the facts thus presented the members vote. They decide whether the strike shall longer be sustained. If they vote nay, no more money of the order can be paid out for the particular labor difficulty.

Members who have been in good standing for not less than one year are entitled, in case they become sick, to what is called a sick benefit. This is the payment of \$5 a week for a period not to exceed thirteen weeks in any one year. No member is, however, privileged to draw this benefit if he or she has brought on the ill-health by intemperance, debauchery or other immoral conduct. No member can draw more than one benefit at any one time. Thus, he cannot draw a strike benefit while receiving a sick benefit, or the reverse. The same principle applies to all the other gratuities of the order. Members not entitled to sick benefits, owing to their not having been members for a full year, are not suspended for non-payment of dues while sick. They have four weeks in which to pay those dues after their return to work subsequent to any illness.

Upon the death of a member, who has been such for one year, the sum of \$50 is paid by the Cigarmakers' union towards defraying the expenses of his funeral or cremation. This sum is paid to the nearest of kin of the deceased member. Upon the death of a member, who has been such for two consecutive years, the sum of \$200 is paid in the same way and for the same purposes. To the heirs of one who has been a member for ten consecutive years is paid, at death, the sum of \$350, and to those of a member for fifteen consecutive years is paid, in the same way, \$550. Upon the death of a wife, or widowed mother depending upon him for support, of any member who has been such for two consecutive years, the sum of \$40 is paid to the member thus afflicted.

A member having paid weekly dues for a period of one year is entitled to an out-of-work benefit of \$3.00 per week, and 50 cents for each additional day. A member having received this benefit for six weeks is not entitled to the payment for seven weeks thereafter, and not more than \$72 shall be paid to any one individual as an out-of-work benefit during any one year. A member losing his employment through intoxication, disorderly conduct, dishonesty, or courting his discharge through bad workmanship or otherwise, is not, however, entitled to an out-of-work benefit for eight weeks thereafter.

The foregoing benefits are gifts or payments not to be returned to the union by the recipient. In addition to them the union maintains a system of loans to those members out of work in any place, unable to secure occupation there, and desirous of traveling to gain work elsewhere. The object of this loan is to furnish the member with a sum sufficient to pay his car fare to the town where he can gain work. He can not receive more than sufficient to take him to his proposed destination. Neither can he receive, at any one time, more than \$12.00, nor more than \$20.00 in the aggregate until the first

loan has been repaid. A member, to be entitled to this loan, must have been in good standing continuously for at least one year preceding. The total amount loaned by the order since the establishment of this benefit was, January 1, 1892, \$398,395.09. Of that amount all had been repaid but \$60,764.74. Doubtless some part of these loans will never be repaid owing to the death of a few members before they have had a chance to discharge their obligations. Another small part must be lost through members who desert the union after obtaining the loan. The total loss through these causes cannot be accurately determined even by the officers of the union. It, however, is small and cannot exceed five per cent. of the amount trusted out in this way. This loss may be considered as a wise expenditure of money since it removes those who are out of work away from the towns where they might be tempted to abandon the union and assist in cutting prices and breaking down the eight hour day of the union portion of the craft. The loan takes the idle to places where work can be secured and they cease to be a menace to the good of the order.

These loans must be considered in connection with the rule of the international union requiring each and every local union to maintain a free employment bureau to aid those temporarily out of employment, to situations. The officers of each local union as they visit the cigar shops in the discharge of their other official duties, collect all possible information relating to opportunities for employment in the craft. This information enables the local employment bureau at once to tell the idle member where, in his locality, work can be obtained. Of course, it is not always possible, in any given place, for all the local craftsmen to obtain employment at the union scale of wages. The idle member who cannot be furnished work in his particular locality is, under these circumstances, assisted by the information about his craft gathered by the union from all parts of the land. This information is summarized in the official Journal. By means of this knowledge the officers can readily direct the member out of work to the exact town where employment may be had. The loan previously referred to furnishes the means of traveling and the craftsman is aided to self-supporting toil with the least possible delay and expense to himself and brethren.

In placing an estimate upon the value of this service of the union to its members it should be recalled that the cigarmakers follow a calling attended with many uncertainties. There is a constant moving about among the members. The average worker is temporarily out of a job two or three times a year. Without the aid of such a free employment bureau, as has been described above, he would be forced to lose more or less time hunting for situations and pay greater or less sums every year to employment agencies for the same purpose. The economy and wisdom of the management of the union can then be judged by its expenses in maintaining this system of free employment agencies for its members. There is no separate

account kept of the cost of maintaining this service of the union. Its expenses are all merged in the general expense of management of all union affairs. Those expenses are given in table D, for the international union. In addition to these the great majority of unions have trifling additional local expenses. The expenses of the St. Paul union, No. 98, are, for two years, given in table E. Those tables show that the total average expenses of the international and local union per member was, for the year 1890, \$3.37, and for the year 1891, \$4.84. The average for the two years was \$4.11. This sum is less than the wages of a cigarmaker for two days, and is less than employment bureaus would charge for obtaining a situation for a man three times. But the union saves its members by this system of employment agencies more than two days work on an average each year. It saves them more than \$4.11 per year in fees which they would otherwise be obliged to expend to other agencies for situations. The moneys used by the unions in expenses of management justify themselves upon this one basis alone. The members receive for them an equivalent in the services which the union furnishes in its wide extended and successful free employment agency. On this basis all the other benefits of the order cost them nothing for management expenses. This is the economy of the union management judged from the standpoint of its services in maintaining an employment agency. But this work is small in comparison with its management of its system of insurance benefits. Those benefits must be studied in connection with the statistics of the receipts and disbursements of the order. The total receipts, which are reported to the international union, are given in table A. This table also gives the resources of the international at the close of every year since 1832.

TABLE A. RECEIPTS AND RESOURCES.

## RECEIPTS.

YEAR.	Income.		Obtained from resources.		Total.
	Contributed by members.	Received in interest.	Returned loans.	Taken from reserve fund.	
1882 ....	\$140,746.81	\$273.79	\$14,984.65	.....	\$156,005.25
1883 ....	153,569.80	780.71	24,665.42	.....	179,016.93
1884 ....	287,679.12	1,117.53	33,176.93	\$56,704.57	378,688.15
1885 ....	198,869.91	527.32	22,236.74	.....	221,633.97
1886 ....	297,086.38	796.29	30,151.62	.....	329,034.29
1887 ....	241,400.19	2,293.95	38,273.93	.....	281,968.07
1888 ....	225,125.14	3,900.66	36,661.49	.....	265,687.29
1889 ....	217,158.95	4,692.56	41,097.68	.....	262,949.19
1890 ....	312,707.09	6,660.89	41,904.80	.....	361,272.78
1891 ....	347,226.25	8,212.88	45,270.63	.....	400,709.76
Total.	\$2,422,570.64	\$29,256.58	\$328,423.89	\$56,704.57	\$2,836,955.68



## RESOURCES.

YEAR.	Loans outstanding at close of year.	Amount cash resources at close of year.	Total resources at close of year.
1882 .....	\$9,951.61	\$85,358.11	\$95,309.72
1883 .....	21,030.35	126,783.30	147,813.65
1884 .....	30,665.70	70,078.73	100,744.43
1885 .....	35,122.50	85,511.46	120,633.96
1886 .....	36,806.59	172,813.25	209,619.84
1887 .....	47,813.70	227,228.24	275,041.94
1888 .....	54,046.96	239,190.53	293,237.49
1889 .....	56,489.72	285,136.54	341,626.26
1890 .....	52,499.64	383,072.87	435,572.51
1891 .....	60,764.74	421,950.06	482,714.80
Total .....	\$405,191.51	\$2,097,123.09	\$2,502,314.60

In this statement of receipts under returned loans is given an account of all traveling benefits returned each year, and the total amount of such loans outstanding at the close of the year is given in the first column of the resources. The cash resources of the order given in the second column are the invested securities, cash in bank and other moneys in the hands of the officers of the local unions. The interest reported in the second column of income is the money received for the use of these cash resources. The money contributed by members is derived from all dues, assessments, fines and other collections from the members, with the exception of the returned loans given in the table and other loans repaid from one fund to another, sums paid by one union to another and thus reported by two different unions. The regular dues of the cigarmakers at present consist of a weekly payment of twenty-five cents. Then there is a semi-annual assessment of fifty cents for the payment of death or funeral losses, special assessments to pay the cost of advertising the union label in labor papers. These, with other minor regular and special assessments, fines, initiation fees, and kindred collections make up the income of the order given under the head of "contributed by members."

Out of these moneys and those received in interest must be met all regular expenses of the international and local unions, and also all appropriations for insurance benefits and other disbursements. Each local union is entitled to a certain percentage of its receipts with which to pay its officers, hall rent and all other expenses of management. If a local union, for any of these purposes, expends more than the legal percentage, it must make good the resulting deficit by a special assessment on its members. The expenses of the average union are all met out of the general funds, excepting as it engages in work for the advancement of the cause of organized labor in addition to that required by the constitution. Most of the unions do thus work for many additional purposes. They raise money for the sick. They give money to aid other crafts in strikes, and in many ways seek to advance the interests of their members.

All this costs money and requires special collections, and also necessitates extra local expenses. These will be given in connection with reports of the local affairs of one of the Minnesota Cigarmakers' unions. In table B is presented an exhibit of the insurance and traveling benefits disbursed by the cigarmakers in the ten years ending January 1, 1892. The out-of-work benefit has not been in force more than two years. The others have been paid during the whole of the period given. The strike, sick, death and out-of-work benefit are grouped together as "benefits given." The traveling benefit being a loan, to be returned, is grouped with the assets or resources of the union. The members have the use of the outstanding loans, and if the amount of this interest could be exactly determined it should be added to the other benefits given to the members of the craft. So, also, should be added any and all portions of these traveling loans not returned to the common treasury. These facts are mentioned to show how the statements of table B do not fully exhibit *all* the benefits of the organization. At least they are not all summed up in the total of those benefits herewith given.

TABLE B. INSURANCE AND TRAVELING BENEFITS.

YEAR.	Benefits Given.					Benefits loaned. Traveling.	Total benefits given and loaned.
	Strike.	Sick.	Death.	Out of work.	Total.		
1882....	\$44,850.41	\$17,145.29	\$1,674.25	.....	\$63,669.95	\$20,386.64	\$84,056.59
1883....	27,812.13	22,250.56	2,690.00	.....	52,752.69	37,135.20	89,887.89
1884....	143,547.36	31,551.50	3,920.00	.....	179,018.86	39,632.08	218,650.94
1885....	61,087.28	29,379.89	4,214.00	.....	94,681.17	26,683.54	121,364.71
1886....	54,402.61	42,225.59	4,820.00	.....	101,448.20	31,835.71	133,283.91
1887....	13,871.62	63,900.88	8,850.00	.....	86,622.50	49,281.04	135,903.54
1888....	45,303.62	58,824.19	21,319.75	.....	125,447.56	42,894.75	168,342.31
1889....	5,202.52	59,519.94	19,175.50	.....	83,897.96	43,540.44	127,438.40
1890....	18,414.27	64,660.47	26,043.00	\$22,760.50	131,878.24	37,914.72	169,792.96
1891....	33,531.78	87,472.97	38,068.35	21,223.50	180,296.60	53,535.73	233,832.33
Total.	\$448,023.60	\$476,931.28	\$130,774.85	\$43,984.00	\$1,099,713.73	\$382,839.85	\$1,482,553.58

In addition to the sums paid as insurance and traveling benefits the cigarmakers expend large sums of money for definite purposes, either to advance certain special interests of the members of the craft as a whole, or to promote the cause of organized labor, or for general charity. Charity, in various forms, calls for considerable sums of money each year. These disbursements, authorized by the international rules and paid from the common treasury of the order, are given in table C, together with a statement of all expenses of management and an exhibit of the sums added each year to the reserve fund, or cash resources in the hands of the officers or invested in various securities.

TABLE C. DISBURSEMENTS.

YEAR.	Benefits given.	Assist'nce to unions, aid to strikes, etc	Journal.	Federation of Labor.	Labels.	Total disbursed for objects of the union.	Expenses of management.	Added to reserve fund.
1882	\$63,669.95	\$5,880.70	\$2,802.32	\$356.37	\$1,200.00	\$73,903.34	\$24,552.36	\$37,244.95
1883	52,752.69	17,150.00	2,802.32	350.37	1,500.00	74,555.38	28,481.26	41,425.19
1884	179,018.86	113,335.00	3,000.00	400.00	2,313.00	298,066.86	43,367.30	.....
1885	94,681.17	37,279.00	3,000.00	400.00	2,053.00	137,413.17	41,500.82	15,454.98
1886	101,448.20	33,924.00	4,062.64	531.00	11,263.94	151,229.78	60,556.85	87,301.79
1887	86,622.50	4,425.00	4,062.65	530.99	11,032.75	106,673.89	74,037.86	54,414.99
1888	125,447.56	9,700.00	4,095.88	689.82	11,426.77	151,360.03	67,281.84	11,962.29
1889	83,897.96	2,190.00	4,095.89	689.83	7,867.02	98,740.70	74,151.90	45,946.01
1890	131,878.24	3,850.00	3,910.40	1,999.46	10,575.19	152,213.29	73,646.91	97,936.33
1891	180,296.60	700.00	3,910.40	1,999.47	15,933.39	202,839.86	107,590.42	38,877.19
T'l.	\$1,099,713.73	\$228,433.70	\$35,742.50	\$7,941.31	\$75,165.06	\$1,446,996.30	\$595,167.52	\$373,859.15

In the foregoing table the amounts disbursed for Journal, American Federation of Labor and union labels are given only approximately. The first two are given in the biennial reports of the secretary. All the other figures are derived from the annual reports of the finances. The financial years of the two reports do not correspond, the one closing with the calendar year, the other the first of September. The cost of publishing the Journal for two years is taken from the secretary's report and divided by two for the amount disbursed for that purpose in any given year. So, also, are obtained the amounts paid the Federation of Labor. The membership of the union has been reported in two different ways at different periods. For the last four years only the members in good standing have been reported. In previous years all were reported whose names were on the books of the order. The change makes an apparent decrease in the numbers in 1888, as shown in table D, and also makes the expenses per member higher relatively in the later years than at first. The expenses of management have increased in the ten years, but not so much as have the services rendered by the union to its members. The expenses of management are given in table D. This table also presents the average contributions per member for each of the ten years since 1882. The same average is given for the expenses of management, the insurance benefits paid, and also for the total moneys disbursed for benefits and for the good of the order, or to promote the cause of organized labor.



TABLE D. EXPENSES OF MANAGEMENT AND AVERAGES.

YEAR.	Expenses of management.			Number of members.	Average ex- pense of man- agement per member.			Average contribution per member.	Average insurance benefit given per member.	Average disburse- ments for objects of union	Average amounts ex- pended by reason of strikes.
	International union.	Local unions.	Total.		International	Local.	Total.				
1882 ...	\$4,604.85	\$19,947.50	\$24,552.36	11,430	.402	\$1.744	\$2.146	\$12.305	\$5.570	\$6.467	\$4.437
1883 ...	4,147.62	24,333.64	28,481.26	13,214	.314	1.842	2.156	11.622	3.992	5.642	2.104
1884 ...	4,834.83	38,532.47	43,367.30	11,871	.407	3.246	3.653	25.076	15.080	25.188	22.566
1885 ...	3,430.84	38,069.98	41,500.82	12,000	.286	3.172	3.458	16.572	7.890	11.451	8.197
1886 ...	5,055.51	55,501.34	60,556.85	24,672	.205	2.249	2.454	12.041	4.112	6.129	3.580
1887 ...	5,606.36	68,431.50	74,037.86	20,566	.273	3.327	3.600	11.738	4.212	5.182	.889
1888 ...	8,664.17	58,617.67	67,281.84	17,199	.503	3.408	3.911	13.089	7.294	8.800	3.139
1889 ...	7,814.28	66,337.63	74,151.91	17,555	.445	3.779	4.224	12.370	4.779	5.624	.421
1890 ...	7,448.80	66,198.02	73,646.91	24,624	.302	2.684	2.986	12.699	5.355	6.181	.904
1891 ...	7,049.13	100,541.29	107,590.42	24,221	.291	4.151	4.442	14.336	7.444	8.375	1.413
Total.	\$58,656.49	\$536,511.04	\$595,167.53	.....	1.343	\$2.960	\$3.303	\$14.185	\$6.573	\$8.904	\$4.765

The last column in this table D presents an exhibit of the average amounts expended in each of the given years by reason of strikes. The figures given include all sums paid as strike benefits, and also all amounts given to unions on strike, etc. The average for the first five years is \$8,177, and for the last five only \$1,373. From this it can be seen that the general tendency of the union is to decrease the amounts paid by the organization for strikes. This proves the truth of the claim made for the organization that it seeks to lessen these labor disturbances and also that this desirable end is advanced by the existence of a large reserve fund such as the cigarmakers at present have at their command. Another fact to be noted in this connection is this: The average expense of management increases as the strike disbursements decrease. This tends to show that the effort of the union is being more and more directed to lessen or prevent strikes and lockouts. The success of the movement on the part of the organization may be measured by the amounts saved in strike expenditures. This, for the last five years, averaged \$6.824 less than it was for the preceding five. This saving effected in strike disbursements is more than twice the average annual expenses of management of the union. Those expenses have, therefore, been justified twice over in the saving effected in the matter of strike expenditures. But strikes represent a loss, in addition to the sums expended by a union such as the Cigarmakers, and given in the summaries of this report. Strikes involve great losses in wages to the men out of work. There must have been thus lost to the cigarmakers \$3 for every one expended by the international union by reason thereof. In reducing the strike payments, as much as is shown by table D, the Cigarmakers' union must have saved its members in wages in preventing strikes at

least \$20 on an average. This, with the saving in disbursements, is more than sufficient to pay all the dues of the order of every description twice over.

Table C shows an increase in the amounts annually disbursed by reason of the union label. This money is employed in purchasing the labels, in advertising the same in the public press, and for legal expenses in preventing dishonest dealers from using them without authority. In the label agitation the union seeks to keep before the public the facts about its struggle to elevate and improve the condition of its workers. This agitation and advertisement creates a demand for union made cigars, and enables the craft to maintain its eight-hour day and its scale of wages in the face of the keen competition of the workers in "sweating dens" and other underpaid labor. The figures show an increasing reliance upon this weapon of industrial propagandism and a decreasing dependence upon the weapon of industrial warfare—the strike. The advertising of the label is the cheaper and evidently the most effective instrument for achieving success.

The foregoing exhibits do not contain any reports or estimates of local receipts and disbursements apart from those of the international. The disbursements of the international, which have been given in detail in this report, are all regulated by the terms of its constitution. No benefit of any kind, and no payment for any purpose, can be made unless authorized by the terms of the fundamental law of the order. Thus, the various unions are allowed to expend a certain part of the sums collected from their members, in expenses of management, such as hall rent, the salaries and expenses of officers. If the local unions expend more than their per cent. for management, or pay to the sick, out of work, or others, sums not definitely defined by the constitution, they must raise, for that purpose, special moneys of their own. There must be great variation in the average amount of these additional sums raised and expended by the various local unions. But with all that variation it is probable that the local receipts and disbursements of the St. Paul Union No. 98 are fairly representative of those of the organization as a whole. Table E gives the receipts and disbursements of that union for the years 1890 and 1891. The money given under receipts was obtained in part from entertainments, from special charitable contributions and assessments. The average number of members in this union was about 180.

## THIRD BIENNIAL REPORT

TABLE E. EXTRA. RECEIPTS AND DISBURSEMENTS OF ST. PAUL UNION OF CIGARMAKERS.

RECEIPTS.			
	1890.	1891.	Total.
Contributed by members.....	\$303.00	\$413.88	
Average contribution per member.....	\$ 1.677	\$ 2.299	\$1.988
DISBURSEMENTS.			
Individual benevolences and funerals.....	\$ 83.25	\$68.85	
Gifts to other unions.....	60.00	80.00	
Agitation for union label.....	108.20	50.00	
Local strike benefits.....	6.50	8.92	
Labor bulletin.....		25.00	
Total disbursed for objects of the union.....	\$257.95	\$232.80	
Average disbursed for objects of the union....	\$ 1.433	\$ 1.288	1.360
Expenses of management.....	\$ 67.55	\$ 69.79	
Average expenses per member.....	\$ .375	\$ .387	.381

From the facts given in this table E. it is found that the St. Paul union disbursed, during the two years for expenses of management, about 20 per cent. of the extra sums collected by it from its members. The corresponding ratio, for the whole expenditures of the international as found in the other tables is, for the ten years, 24.56 per cent. There is, then, but a trifling difference between the ratio of general and special extra local expenses to their corresponding contributions by members. The percentages of expenses, etc., given in table F. for the international, therefore, doubtless, quite well represent the ratios for all the receipts and disbursements of the order. The error, if any, is without doubt against the union. The true figures would show better for the organization than those given.

TABLE F. RATIO OF EXPENSES TO INCOME, ETC.

YEAR.	Percentages of expenses to contributed by members.	Percentages of expenses to insurance benefits paid.	Percentages of expenses to paid for objects of the union.	Percentages of insurance benefits to contributed by members.	Percentages of paid for objects of union to amounts contributed by members.
1882.....	17.44	38.56	33.22	43.24	52.50
1883.....	18.55	54.00	38.20	34.34	47.99
1884.....	15.07	24.22	14.55	62.23	103.61
1885.....	20.87	43.83	30.20	47.61	69.10
1886.....	20.39	59.69	40.04	38.15	50.90
1887.....	30.67	85.47	69.41	35.88	44.18
1888.....	29.88	53.63	44.45	51.28	67.23
1889.....	34.09	88.36	75.09	38.63	45.47
1890.....	23.55	55.84	48.39	42.17	48.67
1891.....	30.99	59.67	53.40	51.98	58.41
Total.....	24.56	54.11	41.13	45.38	59.73



The analyses given on preceding pages show how the cigarmakers' expenses of management are justified in several ways. They aid the members of the union in maintaining their eight-hour day and their comparatively high rate of wages. They return to the members an equivalent in the results achieved for them by the successful employment bureau of the order. They are also justified in the lessening sums lost to them as the result of strikes and kindred labor disturbances. Table F enables a person to compare the Cigarmakers' International with insurance corporations or other organizations for selling any of the insurance benefits managed by this union. In that table is found an exhibit of the percentages of the sums contributed each year by the members, which were expended in expenses of management, paid out for insurance benefits, or for all the objects for which the members are associated together. Other exhibits show the percentages of expenses of management to the sums disbursed for insurance benefits and for the objects of the organization. Later, these percentages, with similar ones from other trade unions, will be compared with companies transacting an industrial life insurance. In that way it will be ascertained whether the members of these unions lose or save money by managing these insurance benefits of their order.

The foregoing tables show how the cigarmakers have a reserve fund of about one-fourth of a million dollars. The business methods of the union must be judged in part by the safeguards thrown around this fund for its safe keeping. This fund is divided among the various subordinate unions proportioned to their membership. Each union has in its keeping a sum of about nine or ten dollars for each of its members. The rules of the union require this to be deposited in the bank for safe keeping, and no portion of it can be drawn except on the order of three of its officers. To lose any of it, these three officers must either conspire to do wrong or they must all be disobedient of the rules in the interest of the dishonest one of their number. In addition to this precaution or check upon the treasurer, the officers handling the money all have to give bonds for the faithful and honest performance of their duties. In this way no great amount of the money of the union can at any one time be endangered by the dishonesty or incompetence of any one person. These precautions, as well as the other facts about their financial management, exhibit a high degree of business sagacity in the direction of the affairs of the association. They show how one large body of the toilers at least are able to wisely direct their common affairs.

Before comparing the exhibits of the business of the cigarmakers, as given in the six foregoing tables, with the receipts and disbursements of the Prudential Insurance Company, this fact should be noted. The tables for the cigarmakers and similar ones for the other unions, here passed in review, include in what is given under the head of "expenses of management" and "costs of administration" more or less of moneys disbursed for other objects not included in the expenses of the Pruden-

tial or any other insurance company introduced by way of comparison. Hence, there is an element of error in all the comparisons made in this part of the report. In all cases those errors are detrimental to the trade unions compared. The errors are unavoidable from the nature of the accounts of the unions. The fact should be borne in mind in the several unions and credit given in each case for a better showing than is herewith presented.

The International Union has in affiliation with it in Minnesota the following local unions with the membership January 1, 1892, given after the name of the towns in which the subordinate unions are located: St. Paul 162, Minneapolis 66, Duluth 27, St. Cloud 27, Austin 21, and Winona 9.

The percentage of the sums paid by the policy holders of the Prudential as premiums, which was used for expenses of management, was 49. The corresponding for the cigarmakers was 24. These figures are for the business of ten years. For that ten years, for every dollar paid to or for policy holders as death benefits by the Prudential, that company disbursed \$1.67 for expenses of administration. The corresponding expense of the cigarmakers was only 41 cents. The Cigarmakers union thus administers its insurance features and other business affairs for one-fourth the relative cost of expenses of the Prudential. The saving thus affected by the trade union by reason of this small ratio of expense account was, for its business in the year 1891, over \$165,000. That is, if the cigarmakers had conducted its business with the same expense of management with this business corporation its members would, to secure their present benefits, have been obliged to pay that sum in addition to what they did in that year. This saving amounted to nearly \$7.00 per member of the order.

That sum, saved by the management of the cigarmakers, as compared with that of this one of its business rivals, was equal to the amount disbursed for their sick, death and out-of-work benefits. It was also the equivalent of the sums actually paid for expenses of administration and all disbursed for strikes, printing the Journal, costs of the labels, etc. That was the saving actually effected by the cigarmakers for their members.

If the Prudential had transacted its business on the same margin for expenses as the cigarmakers, there would have been saved to the policy holders of that company, in the year 1891, the princely sum of \$1,700,000. That is a sum nearly equal to all that the workmen in Homestead, Pittsburgh, Pa., and vicinity lost prior to November 1, 1892, by reason of the great strikes which originated at Homestead in the preceding summer. If the affairs of the Prudential, Metropolitan, Germania, and John Hancock, the four companies doing an "industrial" business in the United States, were all to be conducted on the same economical basis, the saving effected over the present administration would amount to over \$5,000,000 in the year 1891. This is a sum greater than the loss to employers and employes in the United States by the strikes of that year. If

strikes are to be deplored and avoided whenever possible, this large relative cost of managing "industrial" life insurance by the business corporations should call for remark, and the saving effected by this trade union commended.

Strikes occur only rarely. They attract attention as large conflagrations by the glare and smoke and noise which they occasion. The unions are frequently placed in that glare and din, and that side of their activity has most attracted popular attention. But the business activities of the unions, their administration of their benefits and charities, are all conducted in quiet. They attract no man's attention. That business management, in the case of the cigarmakers, lessens strikes and pays for its costs in that way in a two-fold manner. That union also saves its members several times its costs in its quiet work of securing them employment. And the foregoing comparisons indicate that the union, in the same unobtrusive manner, dispenses industrial insurance and other benefits with a saving which balances all strike expenses and all other disbursements growing out of the application of union principles. Here is a saving far in excess of the loss which attracts popular attention. The union should have the credit for this side of its activities.

The extent and character of the saving effected by the Cigarmakers union for its members may best be stated by showing how that saving affects its average member. It has already been mentioned that it amounts to an average saving of about \$7.00 a member as compared with the business corporations writing industrial insurance. The average expenditures of the individual cigarmaker, by reason of his union, is about 30 cents a week. A weekly payment of that sum made to the Prudential or one of the other three companies already named will, for a man 21 years of age, insure him, in the event of death, for the amount of \$550. If paid to the Cigarmakers union for the space of fifteen years, it will insure him for the same amount in the same contingency. In addition that payment will, for all the years in which he is a member in good standing with the union, guarantee him the weekly sick, death and out-of-work benefits already described. It gives him the use of the free employment bureau of his craft, furnishes him with his Journal monthly, gives him the use of loans without interest, and aids him in maintaining an eight hour day with relatively high wages without any additional expenditures. This is also done with a large degree of safety. The union has paid its bills in the past few years and has, at the same time, accumulated a reserve fund larger per member than that of most of these corporations writing industrial insurance.



## II. DEUTSCH-AMERIKANISCHEN TYPOGRAPHIA.

(GERMAN-AMERICAN PRINTERS.)

This is an organization of the German printers of the United States, for their improvement in all that pertains to their calling, and for the regulation and the advancement of their wages. The basis of their present constitution was adopted July 2, 1888. January 1, 1891, the organization had 22 local unions, or Typographia, with a membership of 1,350. Of this number 1,142 were entitled to receive full benefits. This organization strives to support and protect its members in nearly all the manifold exigencies of the life of a workingman. It seeks to advance wages, to maintain a short work day of eight hours, and to furnish regular and continuous employment. In all of these ends or aims it is eminently successful. It is one of the few organizations which has secured and maintained for its members the eight hour day. Other printers in the United States work, as a rule, ten hours for a day's toil. The members of the Typographia are an exception to this rule. Not only do they maintain for themselves the eight hour day, but they have, for the past few years, been able to obtain substantially the same for their labor in a given day as the great body of American printers. This fact speaks volumes for the efficiency of the organization.

To aid its members in securing continuous occupation the Typographia, in reality, maintains a free employment agency wherever it has a local union. In the smaller cities and where the organization is weak the officers have, as one of their duties, to aid their fellow-craftsmen to secure employment. They have reports of the trade in all the houses employing German printers in their own and other towns, and hence can wisely advise in relation to employment. In addition to this, the Typographia, in New York city, and some few large towns, maintains an office to facilitate this business feature of their order. To this office all members of the organization looking for a job at once apply. It is the special duty of the one in charge to gather all the information usually at the disposal of an intelligence office. If the demand for printers is brisk, the local office may be able to secure work for the idle brother at once. If the situation is otherwise, if business is dull, it may be some time before the Typographia can secure the needed employment for the member. If, however, at the end of two weeks the man is still idle, he is entitled to an out-of-work benefit of \$6.00 a week. He cannot, however, draw more than \$30.00 at any one time, nor more than \$80.00 in a given year. To be entitled to this out-of-work benefit a person must have been a member of the organization for at least one year. Further, his want of employment must not be due to faults of his own, as drunkenness or other qualities unfitting a man for successful work.

A member in good standing and taken sick and continuing so for more than one week is entitled to a sick benefit of \$6.00 a week during his inability to labor by reason of his ill-health. If his sickness is of continued duration he receives aid at the rate of \$6.00 a week until he has been paid a total sick benefit of \$300. After that time he is entitled to a weekly benefit of \$3.00 during his disability. During sickness members are also excused from the payment of all dues and assessments to the order.

To receive all the above described allowances in sickness a member must have been, at the time of his becoming ill, a member in good standing and also one entitled to all the benefits of the order. He must likewise have been a member in regular standing for at least six months. To be entitled to all the benefits of the order, a person must have joined it before attaining the age of fifty years. He must likewise present the certificate of a physician that he is in good health. If over fifty years of age at initiation, or unable to secure this medical certificate, he is admitted to membership, but not to full sick benefits. Such a person must have been a member for two years before privileged to draw any sick benefit, and then only \$3.00 a week instead of the \$6.00 of the full beneficiary. After one of this class of members has received his sick benefit of \$3.00 a week until \$200 has been paid him, the sick allowance is reduced to \$2.00 a week. This latter sum is continued to the end of the disability.

When a person dies who has been a member in good standing for six months, his next of kin receive \$50 as a death benefit to pay funeral and burial expenses. For those who have been in good standing for a year, this death benefit is \$100. For those of two years standing, it is \$200. If the wife of a member in good standing dies, the husband is entitled to receive from the same fund the sum of \$50 to pay her funeral expenses. To be entitled to this sum from the Typographia a man must have been a member in good standing for at least one year.

To members out of work and desiring to travel to another town to secure the same, are paid traveling benefits. These are, like the other benefits, gifts to the deserving brother craftsman. They are to aid him in reaching the town where he can secure the occupation which he desires. To that end he is entitled to a gift of two cents a mile for the first 200 miles to be traveled, one cent a mile for the next thousand miles, and thereafter one-half cent a mile for the distance to be traveled. No member can, however, receive at any one time more than the sum of \$20 in this way. To receive any thing in the way of a traveling benefit a person must have been a member in good standing for at least three months.

During the continuance of strikes, which have been recognized by the Typographia, and also during lockouts, the members thrown out of employment by these labor disturbances are entitled to a strike benefit of \$7 a week for all the time lost by them as the result of the strike or lockout.

The Typographia issues a monthly publication in the interest of the craft. The expense for this is met out of the funds of the union. This publication is called the *Buchdrucker-Zeitung*. The Typographia also issues a semi-annual report of membership and finances. This is printed in the best style of the printers' art. To raise the moneys needed to maintain the employment bureau and all the five benefits aforementioned, the members of the Typographia pay the following dues. At entrance into the order there is an initiation fee of \$3. Members in full benefit have to pay therefor a weekly due of twenty-five cents. Those joining over fifty years of age, and those not able at entrance to furnish the needed medical certificate for full benefit, pay weekly dues of twenty cents instead of the twenty-five of the majority. In the event of the death of a member there is levied upon all an assessment of from fifteen to twenty-five cents according to the state of the treasury of the order.

The aforementioned money goes into the general treasury of the Typographia and is divided into two portions. One is known as the moneys of the *Bundeskasse*. It is the fund under the direct control or disposal of the supreme officers of the order. Out of it is paid the cost of printing the *Buchdrucker-Zeitung*, the salaries and other expenses of the supreme officers and other allied expenses. This money is kept in the hands or under the control of the supreme treasurer. The balance of the funds obtained from the dues and assessments, already mentioned, is retained in the hands of the officers of the 22 local unions, and is expended by them for the payment of the five benefits of the Typographia and the expense of administering the same.

The financial reports of the Typographia or Grand Union contain an exhibit of all moneys received from these dues and assessments and the disbursements of the same, whether in the hands of the general or local officers.

In addition to the foregoing dues and assessments, made in the name of the Grand Union, the various local unions or Typographia levy local assessments upon their members for the means whereby to pay all needed local expenses.

The Typographia is represented in Minnesota by one local organization. Its members reside in the cities of St. Paul and Minneapolis and were, January 1, 1891, twenty-four in number. This organization is known as Typographia No. 13, St. Paul-Minneapolis.

The *Deutsch-Amerikanischen Typographia* from July 1, 1884, to December 31., 1890, in the first six and one half years of the organization, in the management of its system of benefits and agencies, received and disbursed money as follows :



Total receipts.....		\$92,247.15
<i>Disbursements.</i>		
Grand Union dues and local expense of management.....	\$17,493.50	
Strike, out-of-work and traveling benefits.....	\$32,044.65	
Sick benefits.....	24,750.65	
Death benefits.....	12,493.25	
Total paid back to members.....	\$69,757.50	
Total disbursements.....		\$87,251.05
Balance unexpended.....		\$4,996.10

In the foregoing statement, under the head "Grand Union Dues and Local Expense of Management," is included what the order speaks of as *Bundesbeitraege und Verwaltung*. The *Bundesbeitraege* or Grand Union dues are, as a rule, not all expended. In fact there was a balance of the fund created by those dues which was still on hand at the expiration of the period covered by this statement. Considering it, however, as all disbursed in the expense of management, the Grand Union dues and the *Verwaltungs-Ausgaben*, or expense of local supervision, is found to be, as stated, \$17,493.50. This is 18.96 per cent. of the receipts contributed by the members. This includes the cost of publishing the monthly paper of the order, the *Buchdrucker-Zeitung*, the salaries and expenses of the officers of the *Typographia*, and other expenses of the same body. This, in addition to the costs of supervision in the local *Typographia*, which are properly chargeable to the management of the order as a whole, \$69,757.50 were returned to or distributed among the members in the form of the five benefits of the order. This is 75.62 per cent. of the whole sum contributed by the members to the order. The expense of management was 24.93 per cent. of the benefits paid to the members.

For the year 1891 more complete statements of receipts and disbursements have been secured than for the preceding years. The receipts and disbursements of the grand treasury (*Bundeskasse*,) were as follows:

Balance on hand January 1, 1891.....	\$1,290.06	
Dues from local <i>Typographia</i> , etc.....	3,246.92	
Total.....		\$4,536.66
<i>Disbursements.</i>		
Publishing the <i>Buchdrucker-Zeitung</i> .....	\$1,122.25	
Other printing.....	290 50	
Agitation.....	165.00	
Salaries of officers....	687.00	
Delegate to American Federation of Labor.....	116.89	
Dues to the American Federation of Labor.....	29.75	
Miscellaneous expense of management.....	168.90	
Total expense of general administration...	\$2,540.25	
Transferred to general fund ( <i>Allgemeine Kasse</i> )....	550.00	
Total disbursements.....		\$3,190.25
Balance in <i>Bundeskasse</i> , January 1, 1892.....		\$1,346.73

Of the money remaining in the *Bundeskasse* or supreme treasury, at the beginning of the year 1891, \$1,000 was loaned to the general fund (*Allgemeine Kasse*,) the balance was deposited in the bank or retained in the hands of the supreme treasurer.

Of the general funds of the order, the moneys paid into the local treasuries and administered for the good of all the members of the Typographia, a statement is contained in the following summary of the *Allgemeine* for the year 1891.

Contributed by members.	Jan. to June.	June to Jan.	Year.
Regular dues.....	\$7,417.75	\$7,375.20	\$14,792.95
Back dues.....	885.45	957.70	1,843.15
Initiation fees.....	218.00	211.90	429.90
Death assessments.....	1,724.65	2,827.25	4,551.90
Returned benefits.....	9.00	....	9.00
Total contributed by members....	\$10,254.85	\$12,372.05	\$21,626.90
DISBURSED.			
Sick benefits.....	\$3,508.08	\$3,229.45	\$6,737.53
Out-of-work benefits.....	2,119.90	3,483.00	5,602.90
Strike benefits.....	941.69	1,127.61	2,069.30
Traveling benefits.....	327.94	428.26	756.20
Death benefits.....	1,750.00	1,751.70	3,501.70
Total paid for benefits.....	\$8,647.61	\$10,020.02	\$18,667.63
Dues paid to Typographia ( <i>Bundeskasse</i> ).....	1,602.50	1,549.85	3,152.35
Local administrative expense.....	605.60	635.53	1,240.93
Total disbursements.....	\$10,855.71	\$12,205.20	\$23,060.91

By the foregoing exhibit it will be seen that the disbursements from this fund exceeded the receipts for the year. The difference was drawn from the funds on hand at the beginning of the year. After meeting this difference there was left in the treasuries of the local unions, to the credit of this fund, the sum of \$6,581.33. The excess of disbursements over the expenditures of the year was caused by the extra sick and death benefits which were made necessary by the prevalence of the "grip" or influenza of the period.

The disbursements from the *Bundeskasse und Allegeinekasse*, other than for benefits, were for the year as follows:

For publishing the <i>Buchdrucker-Zeitung</i> .....	\$1,122.25
American Federation of Labor.....	222.55
Labor agitation.....	165.00
Total for general objects of the union.....	1,519.80
Disbursed in insurance benefits.....	18,667.63
Total benefits and for objects of the union.....	20,187.43
Disbursed in general administration expenses.....	1,020.45
Disbursed in local administrative expenses.....	1,240.43
Total expenses of administration.....	2,261.38

The average amount contributed per member was, for the year, \$15.28. The average amount disbursed in insurance benefits was \$13.88, and this, with the sums expended for the general objects of the union, was \$14.67. The administration

expenses were \$1.67 per member. These expenses were 10.46 per cent. of the sums contributed by the members; 12.11 per cent. of the insurance benefits paid, and 11.20 per cent. of the total amount paid for the insurance benefits and for the advancement of the general purposes of the union. The insurance benefits were 86.32 per cent. of the amounts contributed by the members, and those benefits, together with the sums expended for promoting the objects of the union, make up 93.35 per cent. of the amounts contributed by the members.

In addition to the receipts and disbursements of the two funds of the Typographia already given are the funds collected to pay the purely local extra expenses of the several unions or local Typographia. These expenditures, as with all other trade unions, vary with the local body. The receipts and disbursements of two of these local bodies among the German printers have been obtained. Typographia No. 7, in New York city, is the largest local organization in the craft. It numbered 356 members on the first of January, 1892. The local receipts and disbursements of this Typographia were, for the year 1891, as follows:

## RECEIPTS.

Contributed by members in dues, etc.....	\$2,521.12	
Donation of rent.....	30.48	
Borrowed from the general treasury ( <i>Bundeskasse</i> ).....	390.66	
Total receipts.....		\$2,942.26

## DISBURSEMENTS.

Dues to International Typographical Union.....	\$620.90	
Gifts to members out of work.....	178.15	
Rent for intelligence bureau.....	96.00	
Gifts to other labor organizations.....	271.45	
Delegates to conventions, trade assemblies, etc..	267.50	
For strike and sick support of members.....	52.00	
Total for objects of the union.....	\$1,486.00	
Paid for officers' salaries and expenses.....	\$478.50	
Committees' salaries and expenses.....	518.70	
Miscellaneous expenses.....	589.14	
Total expenses of administration.....	\$1,586.34	
Total disbursements of local funds.....		\$3,072.34

In this union the disbursements were greater than the sums raised from the members. The difference was supplied by a loan from the treasury of the general body, and a reduction in the amount of money on hand at the beginning and the close of the year. The average amount raised among the members for these extra local disbursements was \$8.35 a member. The average amount disbursed in expense of management was \$4.46, and for the advancement of the cause of organized labor \$4.17. If these averages are added to the corresponding averages obtained from the financial exhibit of the International Typographia, we have, for the total receipts and disbursements of



the international and local No. 7, the following: Average contribution per member, \$22.36; average disbursement for expenses of administration, \$6.13; and for insurance benefits and for advancing the good of the order, \$19.11. The expenses were 27.41 per cent. of the contributions and 32.07 per cent. of the amounts paid for insurance benefits and expended to promote the cause of organized labor. These latter sums were 85.46 per cent. of the amounts raised by the members in addition to their dues in the International Typographia.

The average insurance benefit given by the Typographia was, for the year 1891, \$13.88 per member, while that for the cigarmakers was, for the same year, \$7.44. The difference here found in the insurance benefits explains the extra cost of his union to the German printer as compared with the organization of the cigarmakers. The amounts disbursed by the German printers for insurance benefits are larger than for the cigarmakers, since they make their traveling benefit a free gift and not a loan, as does the latter organization. Then the sick, strike and all other insurance benefits among the printers average higher than with this fellow association of craftsmen. The large benefits call for large dues from the members since men, in this busy matter of fact world, obtain just what they are willing to pay for, no more and no less. The local expenses of the New York Typographia are for this same reason large. That union strives to aid its members in so many ways. Its very efficient free employment agency saves its members on an average more than the \$6.13, which are the total administration expenses of a member in that city. Workmen who have been swindled, as so many of them have been by employment agencies, or who have tramped the streets of a great city in search of work, will not call the money expended for the support of such an agency as the New York Typographia badly invested.

Typographia No. 13 (St. Paul-Minneapolis) had, in the year 1891, an average of 25 members. In addition to the sums included in the reports of the International Typographia, this local, No. 13, raised, in that year, \$90.57 and disbursed \$134.15. Its extra receipts were made up of \$55.75 obtained from assessments, \$3.75 from fines, \$18.57 from interest, and \$12.50 from contributions. Of its extra disbursements, office expenses called for \$44.55; gifts to other unions, \$5; dues of trade and labor assemblies, \$12; strike benefits, \$20, and sundries, \$52.70.

In the year 1890 the amount of these local receipts was \$140.40, and of the disbursements, \$119.50. The average annual local contribution for each of these two years was \$5.07 a member. The same contribution for the members of Typographia No. 7, for 1891, was \$8.35. Adding this average of \$5.07 to the average sums reported by the general organization for 1891 we have, as the probable or approximate contribution of the members of the smaller unions of this body, the sum of \$20.35. In the statements of disbursements for Typographia No. 13 \$52.70 were included under the head of sundries.

Some portions of that sum were used for the advancement of the objects of the order and other parts went to meet the expenses of management. The data is not given, therefore, which permits an exact calculation of the percentages of income used in management expenses. The general information obtained shows, however, that the extra local expenses were relatively smaller than in Typographia No. 7, owing to the lesser needs of such expenses in the smaller than in the larger city. The true ratio of expense to income would, if ascertained, show relatively a more economical management than is presented by the ratios previously deduced from the other reports of the order.

The Typographia has the same admirable system of guarding its reserve funds from loss which is employed by the cigarmakers, and mention of which has already been made at length under that order.

The financial exhibit of the Deutch-Amerikanishen Typographia presents, when compared with those of business corporations, a still better showing, in some respects, than does that of the cigarmakers' union. In some other respects it varies the other way. Thus, the percentage of expenses of management to the sums contributed by the members is greater with the printers than the cigarmakers, while the percentage of those expenses to the amounts disbursed for the objects of the order, are smaller with the printers. The explanation of this apparent anomaly is to be found in the fact that the cigarmakers pay smaller average death and other benefits and accumulate a relatively larger reserve fund. In the case of the most expensive local Typographia (No. 7 of New York city) the percentage of all expenses of management, general and local, to the sums disbursed for the objects of the order, was, for the year 1891, 32.07. This was one-fourth of the same percentage of the Prudential for the same year, (135.02) and one-fifth of that of that company for ten years (167.33). If account is taken only of the business transactions reported by the International Typographia the showing is still more to the advantage of the printers. That percentage was 11.20, or one-twelfth of the corresponding expenses of the insurance company for the same year. The members of local unions feel that their local expenses, not reported to the international unions, are for local objects, and that they receive a fitting return in resulting advantages. That is doubtless the case. It is just, then, to compare the union and the insurance company on the basis of the moneys reported to that organization. On that basis of comparison it appears that for disbursing \$1.00 of insurance benefits to its policy holders the Prudential disbursed \$1.35 in expenses, while the Typographia only used a trifle over 11 cents for that purpose. The saving resulting in the administration of the sick, out-of-work, death and traveling benefits would amount to a total of over \$18,000, or over \$14 per member. This is enough to pay the average extra contributions for local purposes of Typographia No. 7, all the strike



benefits, and all disbursements for other purposes, as expenses, Journal, etc. The saving on death benefits paid by the Typographia alone would suffice to pay the strike benefits and all expenses of administration. The late Amasa Walker, in his treatise on "The Science of Wealth," computed that the fair average business profit, or difference between the cost of a commodity to its producer and consumer, is 20 to 25 per cent. The Typographia manage their affairs for one-half of that ratio, the insurance corporation requires five times as much. Surely the union most fully meets the standard of business given by this great authority.

### III. THE INTERNATIONAL BROTHERHOOD OF MACHINERY MOLDERS OF NORTH AMERICA.

This organization was instituted in Detroit, Mich., on June 7, 1883. Its officers, in speaking of their brotherhood, say it was "formed for the purpose of alleviating distress, comforting the mourner and assisting its members by every laudable means in their struggle through life." By following this policy they hoped that it would "merit the approbation of all who desire the betterment and uplifting of their fellowmen." The Brotherhood was organized with the idea on the part of its founders that "a proper observance of its laws and teachings would be productive of the most beneficent results to all concerned, as, besides fostering the habit of providing for the future, it inculcates a respect for law and order that must redound, not alone to the benefit of the individual, but to the state." The organization adopts as its motto "education, charity and fraternity," and invites the co-operation of all the machinery molders in America who desire to see the trade he has chosen elevated to the position it deserves to occupy.

A person to be entitled to membership in the Brotherhood must have served an apprenticeship of four years, or worked at the trade at least that length of time. To be entitled to all the benefits of the Brotherhood a person, on joining, must be in good bodily health and free from any chronic disease. Those who, at joining, are not thus in good health, are admitted to general membership, but are not entitled to the advantage of the sick and death benefits.

The objects of the Brotherhood are stated to be "the improvement of its members; to create a fund for their aid during sickness or disability; to pledge to them the payment of a stipulated sum in the event of death; to cultivate closer relations between employers and employes; to aid its members to procure employment; to collect statistics relative to machinery molders; to regulate the apprentice system; to aid its members in securing a just remuneration for their work; to abolish the piece system in the trade; to publish a monthly journal devoted to the interests of the Brotherhood and of the foundry trade.

The annual convention of the Brotherhood meets on the first Monday in August. The convention for 1892 was held in the capitol building in the city of St. Paul.



The revenues of the Brotherhood are derived from a monthly per capita tax of 50 cents per member, from the sale of charters and supplies and from subscriptions and advertisements for the Journal. The rules of the Brotherhood aim to avoid strikes as much as possible. The local organizations are not entitled to strike without the examination of the grand executive officers. A local Brotherhood striking without that consent, not only forfeits the support of the grand body, it also makes itself liable to expulsion for disobedience of the constitution. In case all efforts at settlement fail and a strike is authorized by the supreme body, the married members, who lose work as the result, receive a weekly strike benefit of \$7.00 and the unmarried receive \$5.00.

For members who have been such in good standing for at least six months, there is paid at death a funeral benefit of \$150. To persons who have been in good standing for at least six months there is paid, in the event of sickness, a weekly sick benefit of \$4.00 for twelve weeks, and, in case the same is needed, a further benefit of \$3.00 for an additional twelve weeks. The Brotherhood has also established an old age benefit. This is paid to members over sixty years of age, and who have been members of the order continuously for at least twenty-five years and have never allowed themselves to be suspended from the organization. The amount to be paid under this benefit is \$4.00 a week. In addition to paying the foregoing benefits the Brotherhood aims to accumulate a reserve or sinking fund to be employed in any emergency which might occur.

The Journal published by the Brotherhood has been of a high order of merit. In addition to printing the official notices of the Brotherhood, it contained a large amount of valuable technical knowledge of interest to the craft. From the copies of that Journal have been compiled the following account of the receipts and disbursements of the Brotherhood for the 13 months ending June 30, 1892.

<i>Receipts.</i>	
Dues, charter fees, etc.....	\$16,482.77
Supplies and sundries.....	452.09
Total receipts.....	\$16,934.86
<i>Disbursements.</i>	
Sick benefits.....	\$ 5,663.09
Death benefits.....	2,250.00
Strike benefits.....	2,235.50
Journal.....	1,889.25
Total for objects of the order.....	\$11,937.84
Expenses of management.....	6,926.58

In the foregoing statement are included, under expenses of management, a number of items that, with a few of the other unions, are included under disbursed for the objects of the order. In the period covered by the foregoing exhibit about 40 per cent. of the receipts of the Brotherhood were disbursed in expenses of management. For every dollar disbursed for the objects of the order there were paid out for expenses about

fifty-eight cents. This latter is a little over one-third of the similar percentage of the Prudential for the ten years ending with 1891. To have administered the three benefits and published the Journal on the same margin of expense as with that insurance company would have called for additional assessments of \$13,000. This would have made the monthly dues about twice their present proportions. To keep the financial accounts of the local and international brotherhoods and unions requires no small amount of book-keeping. Accounts must be kept in a correct manner. To secure this accuracy in accounts calls for a large degree of business tact and knowledge on the part of the international officers. By the aid of those qualities the members of the local bodies are trained in the art of keeping correct accounts and making correct reports. That training affects the business knowledge of all the members. It becomes a sort of school wherein the toilers are educated in the correct methods of business. To hundreds of men this training of his union accomplishes what is secured for the clerk in the commercial college. In this, as in many other ways, is realized the ambition of the Brotherhood of Molders of having their order "redound not alone to the benefit of the individual but to the state."

#### IV. UNITED BROTHERHOOD OF THE CARPENTERS AND JOINERS OF AMERICA.

This organization has the honor of having the largest membership and the greatest number of local unions of any one trade union in the entire world. It dates its existence from a meeting held for organization in the city of St. Louis, Mo., in the spring of 1881. Its first convention was held in Chicago, Ill., in August, in the same year. Previous to the meeting in St. Louis two attempts had been made at uniting the carpenters of the United States in a general union. Both attempts had been signal failures. One of them had been made in the year 1854, the other in 1867. The growth of the order each year since the convention in 1881 is shown in table A.

TABLE A.

Showing Membership and Unions Connected with the United Brotherhood of Carpenters and Joiners Each Year Since 1881 :

YEAR.	No. of unions in good st'nding.	Charters issued.	Charters surrendered.	Net gain of unions	Members in good st'nding.	Gain of memb'rs.
1881.....	13	.....	.....	.....	2,042	.....
1882.....	23	13	2	11	3,780	1,738
1883.....	26	11	8	3	3,293	*487
1884.....	47	21	.....	21	4,364	1,071
1885.....	80	50	17	33	5,789	1,425
1886.....	177	104	7	97	21,423	17,059
1887.....	306	129	.....	129	25,466	4,073
1888.....	439	178	45	133	28,416	2,950
1889.....	527	164	75	88	31,494	3,078
1890.....	697	227	57	170	53,769	22,275
1891.....	798	215	114	101	56,937	3,168
1892.....	802	147	167	4	51,313	*5,624

\*Loss.

At its last convention held in July, 1892, the Brotherhood had 84,376 members enrolled, of whom 51,313 were in good standing and entitled to all the benefits of the order. The decrease of members in full standing, shown in table A., for the year 1892, is due to the fact that at the preceding convention the laws of the Brotherhood were amended and made particularly severe as to suspended members and their reinstatement.

The Brotherhood has been very active for the past six years in reducing the hours of daily toil for the members of the craft. As a result of the first four years effort of the Brotherhood in this line an eight-hour work day was secured in thirty-six American cities, and in the past two years this number was increased to forty-six. In the four years ending July, 1890, a nine-hour day was established in 234 cities, and in the next two years this number was increased to 393. In 1890 the carpenters in 260 cities were working fewer hours on Saturday than on other week days. In 1892 this short work day on Saturday was in force in 432 cities and towns. The comparative value of these changes may be noted by these two facts. The union exists in 724 cities. The amount of the reduction in hours toil, secured through the efforts of the Brotherhood, was sufficient to give regular employment to 11,550 carpenters more than would have found work if all had been laboring on the basis of a ten-hour work day.

Along with its endeavor to reduce the number of the hours of toil the Brotherhood has, for the past six years, been very active in its efforts to advance the wages of all those working at the craft. The success of the organization in this field is thus summed up by the general secretary of the organization, Mr. P. J. McGuire, in his biennial report for 1892.

"Where wages, eleven years ago, were \$1.50 to \$2.50 per day, they have been advanced to \$2.25 to \$3.50 per day. Thousands of carpenters, union and non-union men, now go home on a pay day with more wages than they had prior to the advent of our order. In 531 cities we have forced wages up, that, on a careful computation, close to five and a half million dollars more wages have been annually distributed in the last five years among the journeymen carpenters in cities and towns where we have unions." In the steady and persistent effort of the Brotherhood to reduce hours and increase the pay of the members of the craft much has been accomplished by strategy, tactics and conferences backed by the moral force of the organization. In fact these have been the main agents of the Brotherhood in its successes as given above. When formulating any demand for reduced hours, increased pay, or otherwise, the Brotherhood has been, by its policy, bound to secure at first a conference with the employers, and then by negotiation and conciliation, if possible, obtain the ends desired. The peaceful attainment of those ends has not always been secured. The strike has then been resorted to to accomplish the same ob-



jects. The general secretary of the Brotherhood makes the following report of strikes for the past four years. In those years there were a total of 523 strikes for the following causes:

	1889.	1890.	1891.	1892.
For higher wages.....	10	14	24	29
For eight hours a day.....	1	42	22	6
For nine hours a day.....	63	81	107	65
For shorter hours Saturday.....	6	7	3	15
Against reduced wages.....	2	..	13	7
Lockouts.....	..	..	..	6
Total.....	82	144	169	128

The results of those strikes were as follows:

Number of strikes won.....	78	132	148	118
Number of strikes lost.....	2	8	10	3
Number of strikes compromised.....	2	4	11	7
Total.....	82	144	169	128
Number of members in Brotherhood to each strike.	389	374	337	401

A study of the foregoing facts shows that there has been no great change in the relative frequency of strikes in the Brotherhood during the past four years. The strikes reported above involved an expenditure of about \$140,000. Not all that expenditure was contributed by the members of the Brotherhood. Over \$12,000 was given by the American Federation of Labor. The Carpenters had been selected by the Federation to lead in the movement for securing an eight hour day. It was known that such a movement would be resisted and call for strikes. The Brotherhood and the Federation prepared for it, and with the results shown above. The wisdom of the strikes, with their consequent expenditures and losses in wages to the participating workmen, is to be determined alone by the results achieved. As shown by the tables above these strikes were largely for reduced hour's in accordance with the spirit of the movement which gave rise to them. Those who think that the working-man should have added leisure for the cultivation of his intellectual, moral and social nature will agree that the results achieved fully justified the expenditures and losses required. Those who look upon the mechanic as only a human sort of burden bearer, a man who will, of necessity, use his spare time in saloons and places of dissipation, will find in the figures given an exhibit of folly and waste of the workmen's wages, of financial loss to the employers and the community, and of a downward tendency among the members of this craft. To all the figures prove that the working people are coming to look upon the eight hour day as a very desirable thing for themselves, and one for the attainment of which they are prepared more and more to sacrifice and struggle.

But these strikes and the results accomplished and the costs of the same must not be considered alone in their relation to the movement for an eight hour work day. Those strikes were also a part of the forward movement among the toilers for securing better wages. The members of the Brotherhood, as the

result of that movement, have realized, according to the statement of their general secretary already given, an added annual wage income of five and one-half millions of dollars. In comparison with such gains the strike expenditures and losses borne by the members are but trifling and must be justified by every one, no matter how they may regard the movement for the eight hour day.

In addition to the objects mentioned above the Brotherhood seek, among other things, to discourage piece work in the carpenters' trade, to encourage the apprentice system and to develop a higher standard of skill, and to cultivate feelings of friendship among the craft, to assist each other in securing employment, and to furnish aid in case of death and permanent disability. The Brotherhood meets biennially in convention on the first Monday in August. Its financial years end with the preceding month. The figures for members and strikes already given, and all other tables given in this connection, are for years thus ending in July.

At initiation a member must pay a fee of at least \$2.00. If a beneficiary member, he must pay a monthly due of not less than thirty-five cents. Of the sums thus received as monthly dues the local unions must forward ten cents per capita for the use of the general order. Whenever, from the funds thus received, the grand union cannot meet its expenses and pay all death and disability losses, the officers of the executive committee are authorized to call upon the local unions for an extra assessment to meet the emergency. Out of the monthly dues each local union must set aside five cents per member each month as a reserve fund to be subject to the order alone of the general officers of the Brotherhood. In case of strikes and lockouts the general officers may also order a special strike assessment to support the brothers thrown out of work by the labor disturbance.

To be entitled to the benefits of the Brotherhood a person on joining must be not over fifty years of age and of sound physical health. Upon the death of such a member in good standing for six months there is paid to his next of kin the sum of \$100. The death benefit for a member who has been such for one year is \$200. To the member totally disabled, while working at his craft, there is paid a benefit of \$100; \$200 is thus paid on a two years membership; \$300 on a three years membership, and \$400 on a five years membership. There is further paid in the Brotherhood a wife's funeral benefit of \$25 on a six months membership and \$50 on a years membership. The regular dues of the order have proven insufficient in the last two years to pay all the foregoing benefits. Extra assessments have therefore been levied to meet the same. With the increasing death losses, which always come to any large body of men with the passage of years, the death rate must increase rather than diminish. To meet this more extra assessments must be levied or the regular dues must be increased, or the benefits of the Brotherhood decreased. The carpenters busi-

ness is a hazardous one and he needs all the financial protection that his union now gives by its benefits, and the union would, in the end, be strengthened by the increase in its regular dues to meet the real demands now caused by the payment of its benefits. As showing the hazardous character of the occupation it may be mentioned that of 242 death benefits paid in the two years ending July, 1890, forty-three or 17.7 per cent. of them were for deaths caused by accidents. If to these were added the fourteen total disability claims allowed we would have 22.2 per cent. of the losses paid for members, apart from the wife's benefits, caused by accidents. In the following table is presented an exhibit of all the sums paid by the Brotherhood as benefits since its organization:

AMOUNT OF GENERAL BENEFITS.

YEARS.	No. of benefits paid.	Amount paid.	Balance on hand.
1883.....	6	\$ 1,500.00	.....
1884.....	9	2,250.00	\$ 28.34
1885.....	36	5,700.00	228.02
1886.....	54	9,200.00	2,080.12
1887.....	139	16,275.16	3,333.55
1888.....	172	18,750.00	7,980.51
1889.....	224	25,575.00	6,535.65
1890.....	264	32,267.49	5,986.22
1891.....	374	44,732.65	8,232.51
1892.....	620	72,613.35	55.23
Total.....	1,888	\$228,863.65	.....

The Brotherhood publishes a monthly Journal in the interests of the order. It contributes to the American Federation of Labor and kindred objects for the advancement of the craft, and also for various charities. It purchases badges, pins, etc., for its members. These it secures at wholesale rates and disposes of them at terms which realize several thousands of dollars profit annually. The money thus realized is sufficient to pay the cost of publishing the Journal, and most of the miscellaneous expenses of the Brotherhood. In the analysis of the income and disbursements of the order given below, the amounts paid by the members for these objects are included with the other "contributions of the members." The wholesale cost of the same is then included among the expenditures for "objects of the order." In the exhibit given of receipts and disbursements there are included no sums for the expenses of management of the local unions. There are given only the disbursements for the general purposes of the order and for the expense of administering the same. The secretary keeps separate accounts of the money for strikes. They are derived from what is known as the strike or protective fund. In the exhibit the general and protective funds are included in one total with the following results. The figures in each column



are for the two years included in a biennial report, and in each case the period closes with July 31, of the last year given at the head of the column:

## RECEIPTS.

Contributed by members.	1886-1888.	1888-1890.	1890-1892.	Total.
Charters, per capita, assessments.....	\$44,494.80	\$72,242.35	\$124,961.27	\$241,698.42
Supplies, pins, charms, etc.....	10,572.47	17,950.32	26,565.41	55,088.20
Contributed for protective fund.....	23,205.21	62,848.12	64,877.24	150,930.57
Total contributed by members.....	\$78,271.98	\$153,040.79	\$216,403.92	\$447,717.19
Advertising, subscribers, etc.....	\$60.75	\$1,245.55	\$640.50	\$1,946.80
Interests, sub-rent, etc.....		315.97	291.00	606.97
American Federation of Labor.....		12,060.64		12,060.64
Sundries.....	177.45	425.00		602.45
Total general income.....	\$78,510.18	\$167,067.95	\$217,334.42	\$462,293.55

## DISBURSEMENTS.

Death and disability benefits.....	\$35,025.16	\$57,842.49	\$117,346.00	\$210,213.65
Paid for strikes, etc. ....	11,161.83	72,119.98	60,014.24	143,296.05
Total for two benefits.....	\$46,186.99	\$129,962.47	\$177,360.24	\$353,509.70
Paid for Journal, etc.....	\$7,543.02	\$11,383.67	\$13,261.39	\$32,188.08
American Federation of Labor, tax.....	1,099.70	2,058.94	2,884.83	6,043.47
American Federation of Labor, assessm't		3,200.80		3,200.80
Badges, charms, etc. ....	1,588.43	4,197.97	5,128.94	10,915.34
Charity.....	152.50	200.00		352.50
Total for objects of order.....	\$56,570.64	\$151,603.85	\$199,210.65	\$406,785.14
Expenses of general administration.....	10,913.52	18,417.11	21,850.41	51,181.04
Total disbursements.....	\$67,484.16	\$169,420.96	\$221,061.06	\$457,966.18

## PERCENTAGES AND AVERAGES.

Percentage of amounts contributed by members used for expenses.....	14.07	12.03	10.09	11.43
Percentage of paid for objects of order used for expenses .....	19.29	12.19	10.96	12.58
Percentage of contributions of members used for objects of order.....	72.27	98.67	92.11	90.86
Average annual expense per member.....	\$0.22	\$0.225	\$0.205	\$0.216
Average annual strike expend. per member	0.225	0.88	0.575	0.56
Average annual contribution per member.	1.54	1.79	2.04	1.79

The monthly dues of the members of the Carpenters' Brotherhood cannot be less than thirty-five cents. Over ninety-five per cent. of the local unions at present collect a monthly due of fifty cents or more. Out of the same they pay their general dues and all expenses of local management and seventy-five per cent. of them also pay a sick benefit of from \$4 to \$6 a week. The number of locals thus establishing these sick benefits increases relatively each year. Wherever these sick benefits are established they add strength to the local organization, provided only the monthly dues are made large enough to meet the demands made upon the union without resort to extra assessments.

The Carpenters' Brotherhood, as has already been said, is one of the largest single trade unions in the world. Its affairs may well be compared with those of one of the largest and best managed of American assessment life insurance associations, that of the Ancient Order of United Workmen. The total re-

ceipts in the year 1890, reported by the grand and supreme lodges thereof, were \$5,117,536. The expenses of managing the grand and supreme lodges (not including the expenses of local lodges) were, for the same period, \$365,674. These expenses were 7.1 per cent. of the receipts and called for a payment of \$1.51 per member. The expenses thus reported for the Ancient Workmen are identical in character given for the Carpenters' in the foregoing tables. The expenses of this trade union for six years averaged a little less than twenty-two cents a member. This was only about one-seventh part of that required by the Workmen. The expenses of the Workmen per member, in 1890, were equal to the total average sum paid to his Brotherhood by the carpenters in the years 1886-1888. But the dues first established by the carpenters proved insufficient to pay all the benefits promised, and extra assessments have had to be levied to make up the deficit. This makes the dues for the last two years over \$2 per annum. For those two years the general expenses of the carpenters and all their strike bills can be paid twice over out of the general expenses per member of the Ancient Workmen. The Workmen are one of the very best and most economical of life insurance societies, and yet its excess of general expenses per member over those of the Carpenters are such that if that excess were collected by the Brotherhood from its members they would, with their resulting income, be practically able to pay full wages to all their members who are out of work by reason of a strike or lockout. This would practically be true of all the strikes in which the Brotherhood has been engaged for the past six years.

All the objects accomplished by the expenditures of the Ancient Workmen are those connected with the collection and disbursement of its insurance funds. This work is only a small part of the functions of the supreme body of the trade union. In the case of the Carpenters and most other unions it is impossible to separate the costs of managing insurance funds from the other expenses of the organizations. With the few whose accounts are so kept as to separate these two different expenses it is found that for the collection of insurance funds, apart from the other expenses of administration, requires an added expense of about five per cent. of the sums collected for insurance purposes. This is less than the general expenses of the Ancient Workmen. This expense with them being about seven per cent. of the receipts.

The member who has been in good standing with the Brotherhood for five years is insured in the event of death for \$200, and, in case of total disability, for \$400. His wife is insured in the event of her death for \$50. To secure this insurance of \$250, in the event of the decease of the two persons, the member and his wife would call, if they were about forty years of age, for a payment in the insurance companies, doing an industrial business, of about \$10 per annum. The carpenters paid for it, in the years 1890-1892, \$2.04. But for that sum they received in return, in addition to this insurance, an insurance

of \$400 in the case of total disability, a subscription for the Journal free, their strike benefits, and all the objects secured by the organization in the shape of shorter hours of toil and increased pay. The \$250 life insurance guaranteed by the Carpenters would have cost the member \$7.50 more in the industrial company than the Brotherhood charge for it. This added expense for the life insurance of the Brotherhood is sufficient to pay all the dues of a member including sick benefits and other disbursements of the local lodge, and all the disbursements of the grand lodge. Dividing the expenses of the Carpenters into three equal parts, one for administering the strike benefits, one for collecting and disbursing the insurance benefits, and the third for conducting the general affairs of the order, and it appears that the cost of collecting and disbursing \$100 for insurance benefits with the Brotherhood was, for the last two years, a little less than \$4.00. This is less than the estimate based on the exact figures of other unions and given above. But while it costs the Carpenters to collect and disburse \$100 of insurance benefits from \$4 to \$5, the Prudential, for a period of ten years, appear, from their reports, to have disbursed for the same object on an average \$167. The difference in this expense of administering insurance funds in the two organizations is such that to have managed their affairs with the same margin for expense as that of the Prudential would have compelled the Carpenters, in paying the benefits of the two years 1890-1892, to have collected in that period from \$180,000 to \$185,000 in addition to the sums contributed in the form of dues and assessments, or more than was raised by the Brotherhood in any two years of its existence with the exception of the last two.

The Metropolitan Insurance Company transacts the largest amount of industrial insurance of any single company in the United States. In the year 1891 it disbursed to its policy holders in insurance or death benefits the princely sum of \$4,462,960. This amount of business was transacted with an expenditure for administration of \$4,197,058. The expense of collecting and disbursing one dollar to the policy holders was ninety-four cents. If that \$4,462,960 of insurance could have been collected and disbursed as cheaply as was the case of the death benefits of the Carpenters, four or five per cent, there would have been saved to the policy holders nearly \$4,000,000. or a sum nearly, if not quite, sufficient to pay for all losses to workmen and employers in the year 1892 by the strikes which had their origin in Homestead, Pa. The strike losses fall about one-half upon the employers. It is commented upon the world over. The loss by expensive methods of conducting industrial insurance falls alone upon the wage earners, and capitalists realize a profit out of the transaction. Does this fact explain the silence of the world to the greater resulting waste to the wage earners? If losses and gains in dollars and cents are to measure the popular judgment of labor organizations, should not the relative savings here passed in review be made an offset to the smaller losses of strikes?



None of the foregoing comparisons for the Carpenters take account of any local expenses of the Brotherhood. These local expenses, in the great majority of cases, are associated with the payment of local sick benefits. The average local union among the Carpenters now collects monthly dues of fifty cents. Out of those dues are paid sick benefits of from \$3.00 to \$5.00 a week, all the general disbursements of the Brotherhood included in this report as well as the local expenses of administration. These sick benefits make the Carpenters comparable with the Odd Fellows, the Foresters and kindred benevolent fraternities. But these fraternities, to pay the same sick benefits as those mentioned, collect the same, if not larger, dues than do the local unions of this Brotherhood. The Carpenters effect a saving, as compared with the fraternities mentioned, sufficient to meet all the calls upon them for strikes expenditures, for death and disability benefits, and the expenses of agitating for shorter hours and increased wages.

Better examples of economical and successful business management than are found in the exhibits of the Carpenters and most of the unions referred to in this report are rarely met with in associations of men for business, charity or other purposes. The management of trade unions with such economy calls for the best of administrative ability. The influence of men having such ability, over their fellows, becomes at once a business education of no mean character. It, at least, must be considered in describing the factors which are training and educating the American wage earner in all the qualities of self-reliant and self-supporting manhood.

The occupation of the carpenter being a dangerous one, the management of its finances may well be compared with that of accident associations and societies. In part I, of this report, has been given the exhibit of the German accident associations. They furnish accident insurance the cheapest of any great institution or corporation in the world. In those associations the disbursement of one dollar in the form of accident indemnity called for the payment of 29.1 cents for investigating and adjudicating claims and other expenses of administration. The Carpenters, then, manage all their trade affairs and disburse their moneys for the objects of their order for relatively a smaller percentage of expense than this the best accident association in the world. Voluntary associations of the workingmen can, without the direction of government officials, or the aid of the capitalist or educated, manage their affairs with the greatest possible economy of administrative expenses. The business prosperity of a nation depends more upon the economy of the toilers than upon that of the rich. The factors which teach those toilers the principles of economy and the elements of successful business administration should have the greatest possible freedom of action. Instead of allowing the capitalist to keep his workmen from joining those societies the state should prevent such action, and in all practicable ways encourage the free association of those people.

## V. THE BROTHERHOOD OF PAINTERS AND DECORATORS OF AMERICA.

This organization, as that of the Carpenters, is actively engaged in the movement for a shorter work day. Its growth and its membership each year, since its organization, is shown by the following table:

YEARS.	Unions in good standing.	Memb'rship in good standing.	Gain in Mem- bership.
March 15, 1887.....	13	497	.....
December 1887.....	65	1,962	1,465
1888.....	111	3,987	2,025
1889.....	141	6,640	2,653
1890.....	174	8,065	1,425
1891.....	204	10,168	2,103
1892.....	264	12,126	1,958

The success of the order in the past two years, in reducing the hours of daily toil, can be judged by the following exhibit. It shows the hours of weekly work by the several unions in July, 1890, and the same month in 1892:

	1890.	1892.
Unions working forty-eight hours.....	12	30
Unions working fifty-three hours.....	17	39
Unions working fifty-four hours.....	78	97
Unions working fifty-five hours.....	1	1
Unions working fifty-eight hours.....	10	31
Unions working fifty-nine hours.....	35	48
Unions working sixty hours.....	21	18
Total.....	174	264

Out of the whole number of 264 unions, only 18, in the two years, failed to obtain any reduction in hours of weekly toil. The greater number of those 18 preferred and secured an increase of wages instead of any change in the working time. In addition to the reduction of the working time here chronicled, the officers of the Brotherhood report that in the past five years the wages of their craftsmen have been increased in over 200 different cities and towns. These gains have followed the agitation and organization of the members. They have, as a rule, been brought about by discussion and conference and conciliation with the employers. Those agencies have not always been alone able to secure the desired advance. Strikes have, therefore, sometimes been resorted to and have been a factor in the history of the order. The policy of the Brotherhood relating to strikes is substantially the same as that already given for the Carpenters. The Brotherhood seek to avoid strikes if its members can secure the desired ends without resort to them. If, however, they cannot, then the strike is ordered when its success is apparently probable. The wisdom

of the general management of the union may be in part inferred by a study of the following condensed history of the strikes in 143 different cities and towns in the past two years:

<i>Causes.</i>	1891.	1892.
For increased wages.....	16	28
For eight hours per day.....	2	7
For nine hours per day.....	37	40
For shorter hours on Saturday.....	6	1
For preventing reduction of wages.....	4	2
Total.....	65	78
<i>Results.</i>		
Number successful.....	48	59
Number unsuccessful.....	8	8
Number compromised.....	9	11
Total.....	65	78

The wisdom of the policy which leads to these strikes is to be judged by the costs and the results accomplished. In connection with these strikes there was expended from the general treasury of the organization the sum of \$7,773.22. With an average membership during this biennial period of about 10,000, these strikes called for the contribution of about 40 cents each per annum. This expenditure seems meager when compared with the results shown in the foregoing table.

The Brotherhood pays a wife's funeral benefit from \$25 to \$50 and a member's funeral and disability benefit of from \$50 to \$150 according to length of membership. The amount of such benefits paid by the Brotherhood since its organization is given in the following table:

AMOUNTS OF GENERAL BENEFITS PAID.

YEARS.	No. claims.	Amount.
1887.....	3	\$100.00
1888.....	22	1,450.00
1889.....	27	1,794.00
1890.....	39	2,875.00
1891.....	73	5,175.00
1892.....	45	3,175.00
Total.....	209	\$14,569.00

In the period of two years ending July 1, 1892, there were paid of these benefits:

Seventy members' claims amounting to .....	\$6,900.00
Fifty-four members' wife's claims amounting to.....	2,075.00
Eight disability claims amounting to.....	750.00

Total for 132 claims..... \$9,725.00

The cause of death, in the case of 19 out of 70 of the deceased brothers, was due to accidents. These made up 27 per cent. of the deaths of these craftsmen. If to these 19 are added the eight disability claims paid and due to accidents, there is found



to have been 27 out of 78, or 35 per cent. of the claims paid by reason of members' death and disability claims due to accidents.

Previous to the holding of the last convention of the Painters, assembled in July, 1892, the protective fund, out of which is paid all grants by reason of strikes, was in the keeping of the local unions, although under the control of the general body. At that convention it was ordered to call in all moneys belonging to this fund and place the same in the keeping of the general officers. The receipts and disbursements of the protective and general fund, for the two years ending July 1, 1892, is given herewith. In the reports of the order the two funds are stated separately, here they are all treated as parts of one system.

<i>Receipts.</i>		
Capitation dues.....	\$23,292.40	
Strike dues.....	8,724.05	
Printed supplies.....	6,049.11	
Seals and punches.....	404.95	
Books for local unions.....	774.63	
Badges and emblems.....	2,139.50	
		<hr/>
		\$41,444.64
<i>Disbursements.</i>		
Death and disability claims.....	\$9,725.00	
Strike disbursements.....	7,773.22	
		<hr/>
		\$17,498.22
Journal.....	\$2,697.04	
Badges and emblems.....	1,629.95	
American Federation of Labor.....	235.00	
		<hr/>
Total for the objects of the order.....		\$22,074.60
Printing supplies and forms.....	\$1,575.82	
Seals and punches.....	362.35	
Postage and telegrams.....	556.64	
Books for local unions.....	756.29	
Expenses of general office.....	3,156.19	
Express and registry.....	249.39	
Traveling and organizing.....	975.20	
Total management expenses.....		<hr/>
		\$7,631.88
Total disbursements.....		<hr/>
		\$29,708.48
Balance on hand general fund.....		14,042.14
Balance on hand, protection fund.....		950.83
		<hr/>
		\$14,992.97
Percentage of receipts used for expenses of management ...		18.41
Percentage paid for objects of order used for expenses .....		34.57
Percentage of receipts paid for objects of the order .....		53.26

Average contribution per member per annum about \$2.00; average amount disbursed annually for objects of the Brotherhood about \$1.10, and average annual expenses of management 38 cents. In the previous review of the Carpenters was given the average costs of administering the affairs of the Ancient Order of United Workmen. That was there stated to be about \$1.51 per annum. The general affairs of the Painters are therefore managed for one-fourth the expense of burden upon

each member of those of the Ancient Order of United Workmen. The amount thus saved to the members of the Brotherhood was sufficient to pay their disbursements for the death and disability claims, publish their Journal, furnish the members with badges, pay their dues to the American Federation of Labor, and still leave a small balance to their credit. The sum thus saved was somewhat more than the sums actually paid for general expenses of management and for strike disbursements. It was, therefore, sufficient to pay all the expenditures of the Brotherhood in their costly effort of 1891 to shorten their hours of toil, by strike and otherwise.

The painter, who has been in good standing a number of years, is insured in the event of death or total disability for the sum of \$150. His wife is insured in the event of death for \$50. To purchase this amount of insurance, if about 40 years of age, of any of the industrial insurance companies, would call for an annual expenditure of over \$8. The Brotherhood guarantees that amount for about \$2 and throws in, by way of a premium, an insurance against total disability, if hurt, while engaged at the dangerous occupation of the painter, the gift of strike benefits, furnishes the member a free subscription to the magazine of the order, and all the good results accomplished by the organization in lessening the hours of toil and increasing the wages of the craftsmen. It may be urged against this showing that the Painters have fixed their dues too small to pay all the benefits promised. That is true on the experience of the past. But a monthly addition of five cents to the present dues will be amply sufficient to carry the burden, and this addition will not greatly change the comparisons above given.

In part I is found the average expense, etc., of seven American accident insurance companies. In the companies there referred to, on an average for every dollar paid out as accident indemnity, there was disbursed in expenses of administration the sum of \$1.41. If the Painters had managed their affairs with the same margin of expense and had conducted only one benefit, that of their death and disability fund, their expenses of administering the same would have been \$13,722, or nearly twice their actual expenses of managing benefits, strikes, publishing their paper, and conducting their trade affairs. This \$13,722 would have been about the same as the actual expenses and the sum paid as strike benefits. Too long has the commercial and business world seen nothing in trade unions but the losses connected with strikes. Those losses entail grievous burdens upon the striker and upon society. Anything which may tend to obviate those losses should be favored in all practicable ways. But people should not allow the smoke and din of a noisy strike to blind them to the fact that the average working man is constantly subject to burdens and losses, in comparison with which the strike losses are but trifling. Neither should they be blinded to the fact that the trade unions are accomplishing much in a quiet way for the removal of those heavier burdens, and also as may be seen in the facts here presented, in some of the unions to lessen strikes themselves.

## VI. THE JOURNEYMEN TAILORS UNION OF AMERICA.

This union declares its objects to be: "To rescue our trade from the condition to which it has fallen, and, by mutual efforts, to place ourselves on a foundation sufficiently strong to prevent further encroachments; to encourage a higher standard of skill; to cultivate feelings of friendship between members of the craft; to assist each other to secure employment; to reduce the hours of labor; to discontinue the practice of working in our homes; to secure adequate pay for our labor; to assist each other in cases of need and distress, and, by all honest and just means, to elevate the moral, social and intellectual condition of our members."

At the fifth session of the convention of this union held in August, 1889, there were ninety-seven local unions in good of standing. These unions had a membership in good standing of 5,000. At the last convention held in August, 1891, there were reported 169 local unions in good standing, and these had a membership entitled to benefits of 9,014.

The revenues of the grand union are derived from charter fees, initiation fees, a per capita tax of 25 cents a month for all the members in good standing, and a special levy of five cents per month from each member of the union. This last levy is to be expended in extending the organization of the body. Whenever the above dues fail to meet all the disbursements the executive board are authorized to draw on the funds of the local unions for an assessment of ten cents per member. Such special or extra assessments shall not, however, be levied more than twice in three consecutive months.

In providing this organizing fund of five cents a month the Tailors have secured the means for extending their order. The results secured seem to justify this expenditure. The membership increases and the relative burden of other disbursements are kept very low. In this the Tailors repeat the experience of assessment insurance societies which provide liberally for the enlargement of their organization. Wise expenditures for all kinds of associations generally prove the best economy. More trade unions are weakened or ruined by the effort to do a large business with small incomes than from almost any other cause. The Tailors, by their organizing fund, in one particular, at least, show the success of the opposite policy.

The five cents a month levy constitutes the organization fund. Of the money received from the per capita tax ten cents from each twenty-five go to the funeral fund, ten cents to the strike fund, and the balance to the general fund, from which are paid all the costs of printing the Tailor, the monthly journal of the union. Into this general fund also are paid all sums received by the grand union from other sources, as from charter fees, initiations, etc.

From the funeral fund are paid the following death or funeral benefits. To the heirs of a member who, at his death, had been



in good standing three months, is paid \$75. This payment is \$100 in the case of a deceased member who had been in good standing for at least one year. A member, legally married, at the death of his wife, is entitled to a wife's benefit. That is for a member who has been such for three months \$75.

In the case of trade disputes between the tailors and their employer the local unions of the organization are not entitled to any support from the grand union unless a strike has been authorized either by the executive committee of the grand union or by a majority vote of all the members in all the local unions connected with the order. In the event of a strike, properly ordered in accordance with the rules of the union, the members out of work by reason of the same receive a weekly strike benefit of \$6. During the two years ending August, 1891, the Tailors union was involved in 167 strikes. Those strikes involved 3,900 members. Of these strikes the union won 151 and lost 16. In the same period there were 52 lockouts, of which the members won 34 and lost 18. The total number of strikes and lockouts were therefore 219, of which the members won 185, lost 34, and two strikes and six lockouts were pending at the time when the report was made. The strikes were, with few exceptions, for an advance in wages, and the lockouts were against a reduction in nearly every case. In addition to these trade disturbances the tailors threatened strikes in quite a number of cases and secured an advance of wages. As the result of the strikes and threatened strikes 5,311 members secured an advance of wages amounting to an average of ten per cent., or a total of \$265,550 per annum. As an offset to this must be counted the loss to 587 members in the strikes and lockouts which were failures on the part of the members involved. Their loss is reported as \$14,575 per annum. The net result to the membership, by reason of the agitation organized by the union, was therefore \$250,975 per annum increase in wages. These gains and those recorded in the case of other unions indicate a prosperous industrial condition in the country at large. They also show that the union is of great service in securing to its members all the advance which is warranted at any time or in any country as the result of improving industrial conditions. It may be that the rise in wages here recorded would have come in time without the aid of the union. There cannot, however, be any question that the services of the organization materially hastened the advance and thus gave to its members a return for all the money and time spent in connection therewith.

The Tailors' union meets in biennial convention on the first Monday of August. At these conventions are elected the officers who direct the general affairs of the union. They also transact much important business, but all questions about changes in the constitution, usages, etc., are submitted to the vote of the members in their local unions. With the membership, therefore, rests the decision of all questions which greatly concern the good of the order.

To the convention, at its last session in 1891, was submitted the biennial report of the secretary treasurer. The substance thereof is given below. With that report is associated an exhibit of the receipts and disbursements of the union for the fifteen months ending October 31, 1892. This last is derived from the monthly reports of finances published in the Tailor. This last includes the sums raised by the local unions for the benefit of the Homestead strike. These sums were raised by special contributions for that purpose. In making up the analysis of the disbursements of the order, as given in this connection, the cost of printing and mailing the Tailor, including postage on the same, had, in part, to be estimated. This cost is not given for the first two years in the report of the secretary, and in some months in the last fifteen months the postage for the Tailor is not given by itself. The figures given are based as an estimate from the cost of publishing that journal as it is given in the monthly numbers of the Tailor for the past two years:

	1889-1891.	15 mo. 1892.	Total.
Receipts.....	\$47,734.16	\$46,547.80	\$94,281.96
<i>Disbursements.</i>			
Funeral benefits.....	\$11,250.00	\$17,735.05	\$28,985.05
Strike benefits.....	14,683.01	12,773.21	27,456.22
Organization fund.....	3,793.00	4,143.23	7,936.23
Publishing The Tailor.....	5,400.00	3,714.62	9,114.62
American Federation of Labor.....	.....	765.00	765.00
In aid of Homestead strike.....	.....	1,129.25	1,129.25
Total for objects of order.....	\$35,126.01	\$40,260.36	\$75,386.25
Expenses of management.....	8,602.55	5,743.71	14,346.26
Total disbursements.....	\$43,728.56	\$46,004.07	\$89,732.63
Percentage of receipts used for ex- penses of management.....	18.02	12.34	15.21
Percentage of paid for objects of order used for expenses.....	24.48	14.26	19.16
Percentage of receipts paid for the objects of the order.....	75.90	86.51	79.96
Average annual contribution per member.....			\$3.23
Average annual amount disbursed per member for the objects of the order.....			2.59
Average annual expense of management per member.....			.49

The annual per capita expense of the Tailors, as given above, 49 cents, is only about one-third of that of the Ancient Order of the United Workmen, which is \$1.51. The saving effected by the Tailors by this smaller expense account is sufficient to pay the funeral benefits of the members and of their wives in that order. It is also greater than the expenditures of the order in the form of strike benefits.

The tailor who is married is, by his union payments, secured by an insurance of his life and that of his wife to an amount of \$175. For this insurance and all other objects and expenses of the order he paid to the grand lodge the sum of \$3.25 per annum on an average for the past three years.

By the payment of that sum he was insured for the amount above stated and also insured for a weekly benefit of \$6 in the event of a strike, and he had the assistance of his union in securing employment and in obtaining shorter hours of labor, increased wages and kindred matters. For that same sum of \$3.25, if a young man of about twenty-one, he could purchase of an industrial insurance company an insurance of about the same amount of \$175. For such a young man the saving of the trade union over the Prudential or Metropolitan is found in the added benefits above enumerated which his union bestows. To one who is 40 or 50 years of age there is the same advantage, and in addition comes the fact that his money will purchase of the insurance company only about one-half of the insurance and of the union about the same as at first. He would receive of his union twice the insurance which the company would sell him for his general dues in the union. In addition, he would have all the added benefits enumerated in the case of the younger man.

The business of the Tailors union has nothing in common with that of fire insurance save that both receive money and distribute the same in some form of insurance benefit. Attention may, however, be called to the business of fire insurance in this connection to show the economy of management of the Tailors and of all the other trade unions. In the last report of the Minnesota Commissioner of Insurance is a table showing the detailed receipts and disbursements of 101 American fire insurance companies doing business in that state in the year 1891. Those companies paid in that year, for fire losses, the total of \$48,908,694. They expended for salaries of officers and employes alone the sum of \$5,889,242, or 12 per cent. of the amount disbursed in fire losses. This one item of expense is two-thirds as large as all the management expenses of the Tailors. For commissions and brokerage of agents, salaries, taxes, and other expenses, these companies disbursed \$29,248,122, or 59 per cent. of the fire losses paid by the same companies. The ratio of expenses of management to amount disbursed for the objects of the association is, for the Tailors, only one-third of that of these 101 fire insurance companies. To have purchased the funeral or life insurance benefits of the union, with the margin of expense of the other companies, would have called for the payment of \$17,101 as expenses for the \$28,985 funeral benefits paid. Such an expense account for the one benefit would be greater than all the expenses of the Tailors. This union, as a business organization, has, then, nothing to fear from a comparison with the associations of great capitalists for insurance purposes.



## VII. THE INTERNATIONAL TYPOGRAPHICAL UNION OF NORTH AMERICA.

This is one of the oldest and strongest of American trade unions. It held the fortieth annual session of its convention in Philadelphia in June, 1892. At that time there was reported a membership of 28,187. The union seeks to gather into its organization, through its subordinate unions, all printers, pressmen, stereotypers, or electrotypers, book-binders, type-founders, editors, (other than managing and city editors) and reporters and kindred trades who have served four years at their respective callings. The international reserves to itself the right of fixing, regulating and determining all matters pertaining to *fellowship* in the several allied crafts, while to the subordinate unions is conceded the right of making all necessary laws for local government which do not conflict with the laws of the international. Not more than one union of any one of the allied crafts shall be organized in any city or town among the English speaking members. The annual meetings of the international are held on the second Monday in June. At these meetings or conventions are elected the general officers of the union and action is taken upon all questions affecting the craft.

The revenues of the union are derived from charter fees, supplies to subordinate unions, monthly dues from the members and special assessments. The monthly dues have been advanced twice in the past two years and special dues included in the same. In 1890 the monthly dues were ten cents per member. At the annual convention these were raised to fifteen cents and in 1892 to twenty-five cents. Prior to the action of the last convention there was a special tax of ten cents for the support of the Printers' Home. The last change does not, then, add to the actual dues of the members, but includes the former special tax with the regular dues of the craft. In the future, of the money derived from the monthly dues, twenty per cent. goes to the general fund for payment of the general expenses of the union; thirty per cent. to the defense fund for the support of strikes; thirty per cent. to the burial fund and twenty per cent. to the fund for the support of the Printers' Home. The burial fund was created in the year 1891 and an addition of five cents made to the monthly dues for its maintenance.

The union publishes a semi-monthly periodical called "The Typographical Journal" which is its official organ. One copy of this paper is furnished free to each chapel of printers, and three for the officers of each local union. All others desiring the Journal are required to pay a subscription price of twenty-five cents annually.

Twenty per cent. of the monthly dues of the Typographical union go to the support of The Childs-Drexel Home for Aged

and Infirm Printers. This institution is located at Colorado Springs, Colorado. It is a magnificent charity, supported by the free will offerings of the members of this trade union.

For the past two years the printers have been paying five cents a month into a burial fund, from which are paid funeral benefits of \$50 for all the members in good standing who die. From this fund, in the first 7 months in which it was in operation, there were paid 228 burial claims. Of the deaths 113, or about one-half, were due to consumption and kindred diseases and eight only were due to accident, or 3.5 per cent. of the whole.

The policy of the international with reference to strikes is as follows: "The International Typographical Union, recognizing strikes as detrimental to the best interests of the craft, recommends subordinate unions not to order a strike until every possible effort has been made to settle the difficulty. But, as resistance to unreasonable demands will at all times be necessary, it enacts the following to protect its members when called upon to sacrifice their positions in defense of their principles." Then follow the rules for the ordering and regulation of strikes. Strikes cannot legally be made unless an officer of the international visits the place and investigates and reports to the international executive committee and they give consent to the same. To the members out on an authorized strike are given weekly strike benefits of \$7.00 to married men and \$5.00 to the unmarried. Workmen out on strike must in any town report to union headquarters every day, and if work can be secured for them they must work, and if in any week four days labor is obtained for them, they are thus debarred from all strike benefits for that week. Unions ordering a strike without complying with the rules of the craft are not permitted to receive any benefit of the defense fund. No union is permitted to order a strike until one year from the reception of its charter. An examination of the causes of the strikes participated in by the typographical union shows that they are mainly those alluded to in the words of the constitution of the order as follows: "For resisting the encroachments of unfair and disreputable men who are too strong for the local union to contend with; for the purpose of advancing and defending the principles of unionism as applied to our trade." Many strikes arise in the effort to adjust the printers' craft to new conditions, such as arise from the introduction of type-setting machinery, etc. In no craft, unless it be in that of the Amalgamated Iron and Steel Workers, are there so many questions arising about the business, concerning which employers and employes are apt to be in conflict. Hence, the character of the trade disputes in which the printers have, as a rule, been engaged in the past. The value or wisdom of those strikes cannot be directly measured, as are those of the men in the building trades, in dollars added to wages, or reductions secured in hours of toil. It can be determined alone by the success or failure of union principles.

Of the subordinate unions sixty-two, in addition to the benefits secured by the international, raise and disburse money for weekly sick benefits. These benefits range from \$2.50 to \$10 a week.

The financial year of the international union ends with the 30th day of April in each case. The following shows the receipts and disbursements of the order for the past three years. The figures given are for the financial years ending April 30, in the years mentioned :

<i>Receipts.</i>	1890	1891	1892	Total.
Per capita tax.....	\$23,963.45	\$30,042.03	\$42,764.34	\$96,769.82
Printers' Home fund.....		19,245.65	30,112.41	49,358.06
Special assessment.....			35,093.81	35,093.81
Typographical Journal.....	1,361.98	1,888.02	1,925.45	5,175.45
Interest.....		346.96	555.52	902.48
Supplies.....	186.60	1,960.84	2,652.96	4,830.40
Sundries.....	2,558.53			2,558.53
Total receipts.....	\$28,070.56	\$53,483.50	\$113,134.49	\$196,688.55

<i>Disbursements.</i>	1890	1891	1892	Total.
Strike and lock-out benefit...	\$12,866.11	\$19,039.78	\$50,828.72	\$82,734.61
Burial benefits.....			11,500.00	11,500.00
Childs-Drexel Printers' Home.....		21,798.36	30,360.51	52,158.87
Typographical Journal.....	1,263.55	3,243.48	4,033.25	8,540.28
American Federation of Labor.....	1,141.90	2,874.20	1,662.30	5,678.40
Typographical and Labor Congress.....	498.80	400.00		898.80
Total for objects of order...	\$15,770.36	\$47,355.82	\$98,384.78	\$161,510.96
Stationery, rent, etc.....	\$2,788.97	\$2,780.17	\$4,564.58	\$10,133.72
Convention and proceedings..	2,212.41	2,918.82	4,825.80	9,957.03
Salaries and organization....	3,796.45	4,240.45	4,343.06	12,379.96
Total expense management	\$3,787.83	\$9,939.44	\$13,733.44	\$32,470.71
Total disbursements.....	\$24,568.19	\$35,747.90	\$112,118.22	\$172,434.31

	1890	1891	1892	Total.
Average receipts per member.....	\$1.25	\$2.12	\$4.02	.....
Average paid for objects of order per member .....	\$0.71	\$1.88	\$3.53	.....
Average paid for expenses of management per member.....	\$0.39	\$0.43	\$0.48	\$0.43
Percentage of receipts paid for expenses of management.....	31.6	17.9	12.1	16.5
Percentage of receipts paid for objects of the order.....	56.3	20.9	13.9	20.1
Percentage of paid for objects of order paid for expenses.....	51.3	86.7	86.9	82.1
Membership.....	22,319	25,165	28,187	.....



In the foregoing exhibit may be found a striking illustration of the fact that the management of death and other insurance benefits, and the administration of charity funds, adds but a trifle relatively to the expense of directing the affairs of a trade union. From this fact may well be deduced the conclusion that the cheapest and best method of conducting all forms of industrial insurance is in connection with reliable trade unions. The amounts collected and disbursed for objects of the order, in the three years covered by this report, increased, on an average per member, from 71 cents to \$3.53, or \$2.83. The addition to the expense which accompanied this additional collection and disbursement of benefit and charity funds was only nine cents per member, or a trifle over three per cent. This added per cent. is, then, substantially, the cost of collecting and disbursing funds for charity and insurance benefits and the objects of the order. All sums in the expense account above this three per cent. of the amounts disbursed for the objects of the order are, then, the actual expenses of superintending and directing the business affairs of the union.

The American printers have shown a wonderful degree of charity and public spirit in voting to establish and maintain a home for disabled printers. The addition to the receipts and disbursements of the typographical in the past three years is due to the large sums disbursed for the erection of that Home, and in the past year for the maintenance of the recently established death benefit of the union,

The nucleus for the establishment of this home was a gift of \$5,000 from Messrs. Geo. W. Childs and Anthony J. Drexel, of Philadelphia. Mr. Childs' business as a great newspaper publisher had brought him into intimate and constant business relations with the typographical union. His gift expressed his belief in its usefulness to its members and to their employers as well. Upon that belief Mr. Childs has ever conducted his business and thus avoided strikes and trouble with his men. The home becomes a memorial of the fact that some employers in the most difficult of trades are able to avoid labor troubles by a policy which frankly recognizes the right of their employees to exercise their own judgment about joining unions for the advance of their mutual interests. The home emphasises the fact that the true basis of all legislation about labor is to insist that all employers and all employees shall be compelled to do what the best in their number do willingly and without law.

The large sums given for the erection and support of this home and the local charities of the order are a proof that trade unions develop, to some extent, the nobler side of human nature. In fact the assessments which these unions voluntarily make for the support of other workmen on a strike are dictated largely by the same motive of generosity. They are to be judged, not alone from the financial results achieved as the results of the strikes, but from the indirect training which they exert upon the workers in teaching them to consider and sacrifice for the welfare of others besides themselves.

The figures given above, showing the cost of collecting and disbursing these strike and charity funds and insurance benefit funds of the printers to be three per cent. of those sums, can well be compared with the corresponding figures of the best conducted sick benefit associations of the world. The sick insurance organized and directed by the German government in the interest of the working classes of that nation are pointed to as models of economy in administration expenses. The receipts for that insurance, in the year 1890, were 114,558,315 German marks. The disbursements, exclusive of taxes, were 92,710,244 marks. There were paid for the services of physicians, for medicines, support of hospitals and kindred institutions, weekly benefits to the sick, 84,040,014 marks. The administration expenses, exclusive of taxes, would be the difference in the two statements of the disbursements, or 8,670,230 marks. The percentage of all benefits, etc., which were required to pay expenses of management, was 10.34. The number of members insured were 6,065,637. The average contribution for each member was about \$2.80, and the average costs of administration were about twenty-nine cents. The three per cent., which it has been found is the approximate cost of collecting and disbursing the charity and benefit funds of the printers, apart from and in addition to their legitimate expenses as a trade organization, are less than one-third of the expense ratio of the German sick associations. The average amount raised and disbursed by the printers' international was, for the year 1892, larger than the average sick collection of the German associations.

The total expense of management was only 20.1 per cent. for three years in the case of the printers. This is what the late Amasa Walker computed as a low business margin of expense in a well conducted business enterprise. If, then, the printers had no other purpose in their organization than the collection and disbursements of the moneys included above under objects of the order, they would meet in their management the requirements of business established by this great economical writer. But they do better than this. They also, for the same margin of expense, conduct the trade affairs of a craft whose condition has connected with it many perplexing questions which need constant adjustment between employers and employes. All that adjustment is effected and all resulting bills paid on the margin of twenty per cent. on an average for three years, and for 13.9 per cent. in the year 1892.

The typographical union, which has long been in existence, has learned the value of liberal expenditures in local matters. No craft, and hence no trade union, has so many difficult questions to adjust as they. The printers have a large floating membership, men drifting from city to city. To assist these men to places of work, to adjust the trade to all the changing exigencies of business, calls for a large amount of work. It is work done in the interest of all, and it is but right that all should assist in paying therefor. This is what the printers in



their local unions do. Those locals are primarily associations for transacting this local business in a business-like manner. The union is to assist in maintaining the scale of wages, and prevent the imposition of the grasping employer in the printers occupation with its multiplied opportunities for disputes and quarrels. Primarily, the success of the typographical, as that of the cigarmakers, must be judged by its attainments in this field. That success is attested in many ways. The opponent of the union calls its management overbearing and insolent. Its members agree that it protects them in their rights and secures them an equal voice with their employers in the adjustment of all questions relating to the craft. The very objections of its enemies testifies to the claims of its friends, for it is a statement of the same fact from a different point of view.

In the analysis of the finances of one of the largest printers' unions in the state, which is hereinafter given, the local expense of management is found for one year to be about \$2.36 per member. That expense is less than the earnings of a printer for one day. The traveling printer, coming to the town where this union is located and is not saved by it more than one days time in hunting for work, will seldom be met with. The union saves, then, its members a sum equal to its expense in this way. But the local expenses not only aid in securing the members employment, they pay for conducting all the other business connected with the craft. They also pay for the administration of the local charities for which the printers every where take an interest. These local charities greatly exceed the charities and benefits disbursed through the international. This may be seen in the following analysis of the receipts and disbursements of local Typographical No. 42 of the city of Minneapolis. This local union was reported by the international as having, April 31, 1892, a membership of 332. The following report is for the financial year ending March 31, 1892. The money given in receipts is in addition to all moneys collected and sent to the international. So the funeral benefits and all disbursements are in addition to those for the international.

Receipts.....	\$2,330.10
<i>Disbursements.</i>	
Sick benefits.....	\$749.00
Sums given to assist other Typographical unions in trouble..	517.50
Sums given to assist unions other than the typographical..	55.00
Funeral benefits.....	399.35
Cemetery reserve fund.....	151.70
Dues to Trades and Labor Assembly.....	31.10
Total for the objects of the order.....	1,903.65
Salaries, stationery and general expenses.....	783.44
Total local disbursements.....	\$2,797.44
Amount on hand in cemetery reserve fund.....	\$571.26
Average contribution per member.....	7.02
Average disbursements for objects of the order.....	5.73
Average expense of management.....	2.36



Uniting these averages and those of the international for the same year we have for the total of local and international the following:

Average contribution per member.....	\$11.04
Average amount disbursed for objects of the order.....	9.26
Average expense of management.....	2.84

The percentage of the expenses to contribution would be 26. The percentage of expenses to disbursements for objects of order, 30. Percentage of contributions to disbursed for objects of the order, 84.

In local union No. 42, five per cent. of all receipts go into a cemetery fund. The union has a lot in the cemetery for the burial of needy printers, and this fund is to keep the lot in order and for kindred purposes. The sum regularly devoted to this purpose is a charity. Of the same nature are the sums voted as free gifts to assist typographical and other unions in need, and the sums used in the payment of local funeral benefits. The total of these charities, apart from the local sick benefit, in one year, was \$1,123.55, or an average of \$3.28 per member. This average charity contribution of \$3.28 of local union No. 42 is three-fourths of the \$4.80 which is the total per capita gift reported by the Congregationalist denomination of the United States in the year 1891 for charities, education and home and foreign missions. The Congregationalists are the most generous givers of any body of church people. The gifts for charity of union No. 42 are larger than the average contributions reported for the above mentioned objects by any excepting three or four denominations in the land. It is also over half of what some denominations give annually for the objects mentioned and also for the support of their local churches. These local gifts of union No. 42 are in the line with the generous charity of the order which has built and maintains its Home for Aged and Infirm Printers. They show how these unions foster the unselfish and generous side of their members.

The sick benefits of union No. 42 are \$6.00 for a period of thirteen weeks. That period may be prolonged by a vote of the union. The union reports that its expenses for the year 1892 were above the normal, and hence the foregoing is hardly a fair exhibit of their economy of management. Yet with this excess of expenses above the average the total affairs of the local and typographical are administered for a percentage of expense but slightly in excess of what Mr. Walker has stated to be the normal management of a business corporation. This being so, it may be said that, as compared with business corporations, after managing its charities and benefits, it costs the printers practically nothing to direct all their trade affairs.

That percentage of combined local and international expense to amounts disbursed for the objects of the order was 30. This may be compared with the like percentage of investment of old line insurance companies. These are the largest moneyed institutions in the world. Two of the American companies have in their control more money than the Bank of England. There

were thirty-three of these great business corporations doing business in Minnesota in the year 1891. These companies received in that year as premiums from their policy holders the immense amount of \$158,874,272. They paid back to their policy holders the sum of \$90,193,459. Their management expenses, exclusive of the dividends paid to stock holders, were \$42,249,247. Those management expenses were over forty-six per cent. of the sum disbursed to policy holders, or fifty per cent. more than the total expense account of the local No. 42 and the international. That is, the two unions manage their business or union affairs, and, in addition, administer their charities and insurance benefits for two-thirds the margin of expense of this combination of the greatest moneyed institutions in the world. They do this though their trade affairs require, for their adjustment, great care and much expense, and the unions pay their members in full for all their time employed in behalf of the common interests of the craft.

#### VIII. INTERNATIONAL FURNITURE WORKERS' UNION.

This organization is a combination of Cabinetmakers, Carvers, Varnishers, Machine Furniture Workers, and other operatives at branches of the furniture trade. It has for its declared objects: The maintenance and increase of the current rate of wages, shortening the hours of labor, abolishment of the contract system, mutual support in cases of strikes, losses by fire, lack of employment, sickness and death, legal aid in litigation with employers, and the publication of a trade journal.

The members of this union are required to pay an initiation fee of at least \$1, and regular monthly contributions of forty cents or more. The local unions connected with the organization may, if they so decide, require fees and dues larger than above specified. They cannot exact less. From the funds thus accumulated the officers of the local unions pay ten cents a month for each member into a reserve fund. The executive committee of the International Union alone has the right to dispose of this fund. Out of this reserve fund is paid all strike benefits of the order. When the total amount in the reserve fund is less than \$2 per member the executive committee are directed by the constitution to levy an extra tax in such an amount as the circumstances may require. In addition to the ten cents a month per member, to be paid by the local unions into the reserve fund, those unions must pay to the executive committee five cents a month per member for agitation purposes and for the support of the trade journal. This money is kept by itself and is known as the general fund. There are also levied at times special assessments upon the members of the organization, which comes into this same fund. Out of this fund are paid the salaries and expenses of the officers of the international union and the expenses of the sessions of its convention which are held once in two years. The funds for



the treasuries of the local unions are derived from the balance of the initiation fees and regular and special dues collected from the members, after the payment, of the sums above described, to the reserve and general funds. Out of these local funds are paid administration and committee expenses, dues to Central Labor Unions or Trades Councils. Out of it are also paid such sums as the local bodies may vote for strikes and lockouts, for agitation and organizing purposes, for the support of victimized members, and for lawsuits against employers.

To the foregoing described reserve, general and local funds, all members contribute and all are alike entitled to the benefits to be derived from their administration. In addition to these funds there are, in the international union, moneys raised and administered to give the members benefits in the case of sickness and death and also to insure their tools against fire. The moneys thus raised are kept in three funds by themselves and are known as the sick benefit funds, mortality funds, and the tool insurance funds. Contributions to these funds are not obligatory as is the case with the reserve, general and local funds. To be entitled to receive the sick benefits of the order, a member must pay into the appropriate fund a special initiation fee of \$3.00 if less than 45 years of age. If a member, at joining, is over 45 he must pay an additional dollar for each year in excess of that age. No one can become a participant of the sick benefit funds who does not pay an initiation fee thereto before he has reached his fifty-fifth year. Members taking the sick benefit must be examined by a physician and be accepted by him as sound in health. The dues to the sick benefit are fifty cents a month. A member, after he has been admitted to the sick fund for three months, is entitled, in case of sickness, to a weekly benefit of \$6.00 a week for twenty-six consecutive weeks. For the next twenty-six weeks the benefit is \$3.00 a week. At the end of a year's continual sickness the member is again entitled to a \$6.00 benefit a week for a second twenty-six weeks. At the end of that period and so long as he shall be incapable of work, by reason of ill-health, he is entitled to a weekly benefit of \$3.00.

The initiation fee to the mortality fund is \$1.00. At joining, members have to be examined by a physician and they must pay for the examination. Whenever the mortality fund sinks below \$1.00 a member, the executive committee must levy an assessment upon the members of the fund. This assessment shall in no case be less than twenty-five cents. Upon the death of a member contributing to the mortality fund, his nearest relative or friend is entitled to the sum of \$250. Upon the death of a wife of a member he shall be paid the sum of \$100. These benefits must be paid within thirty days.

Members who want to join the tool insurance fund must pay, for the formation of a guarantee fund, an initiation fee equal to seven per cent. of the sum in which they wish to be insured. The amount in which a member is insured shall in no case be



less than \$25 nor more than \$150. Members increasing their insurance must increase the sum in the guarantee fund. If they reduce their insurance they are entitled to receive back the difference in this fund in the same manner. When the guarantee fund falls below seven per cent. of the amount insured the executive committee levies an assessment of a proportionate rate of percentage. Members participating in this insurance receive, in case their tools are damaged by fire, water, falling of building, explosion, etc., within four days, the amount fixed by the investigation committee. No losses are, however, paid which are incurred while the member is working on Sunday or after regular hours.

The number of members in the International Furniture Workers' Union, January 1, 1892, was 6,410. Of these 716 were members of the sick benefit fund, 1,225 of the tool insurance, of the mortality the number is not given. The receipts and disbursements of the several funds of the union were, for the fifteen months ending January 1, 1892, as follows:

#### TOOL INSURANCE.

Amount of insurance in force October 1, 1890.....	\$68,609.00
Amount of insurance written in the fifteen months.....	16,010.00
Amount of insurance in force January 1, 1892... ..	84,649.00

#### *Receipts.*

Seven per cent. guarantee on new insurance.....	\$320.80
Assessments or insurance premiums.....	701.75

Total.....	\$1,022.55
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#### *Disbursements.*

Expended for fire losses.....	\$283.50
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Paid for printing.....	5.50
Salaries of officers of central fund.....	56.00
Other expenses of management.....	9 05

Total expenses of management.....	\$70.55
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Total disbursements.....	\$354.05
Excess of seven per cent. guarantee January 1, 1892 .....	325.24
Deficit seven per cent. guarantee October 1, 1890... ..	22.46

Total.....	\$701.75
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#### *Resources.*

Funds in the hands of the local treasurers.....	\$4,365.58
Funds in the hands of the treasurer of international.....	1,885.09

Total cash resources.....	\$6,250.67
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#### *Liabilities.*

Seven per cent. guarantee on amount insured.....	\$5,925.43
Excess of seven per cent. on hand January 1, 1892.....	\$325.24

Of the seven per cent. guarantee fund five-sevenths are left in the hands of the treasurers of the local unions, the balance is transmitted to the treasurer of the international. All losses are paid from the local funds and upon the decisions of the officers of the local unions. The two per cent. in the hands of the international treasurer is a kind of clearing house fund for the equalization of the losses. If one union pays out for losses,

the international executive committee, in due time, makes up any deficit of the local funds from the moneys under their control.

In the foregoing exhibit it is found that in the fifteen months passed in review \$283.50 were expended for fire losses, and \$70.55 were paid for expenses of management. The total expended was \$354.05. This sum was only .486 of one per cent. of the average amount insured for the year. The furniture workers toil in shops which are classed by the insurance men as hazardous or extra hazardous. The rate of insurance in those shops often is as high as five per cent. A workingman insuring his tools in an ordinary company must notify the agent and receive a permit every time he changes his place of work or moves his tools. This is a great trouble to the wage earner who is thus forced to lose some time every occasion of moving his tools or forego insurance thereupon. With the tool insurance of this union there is no need of this notification. The member's tools are insured so long as he is in good standing, no matter where his property is located. To collect the pay for loss he must simply show, to the satisfaction of his fellow-craftsmen, that he has actually suffered the loss claimed. The amount contributed by the members as insurance premiums was \$701.75. This was .911 per cent. of the sum insured. The expenses of management were 24.90 per cent. of the amount returned for fire losses, and 10.04 per cent. of the amount contributed by members. This percentage is much higher than it will probably average in a series of years. It is made large for the year by reason of the exceptionally low rate for insurance. That rate is only one-tenth of the one fixed by insurance companies on the same class of risks. The percentage of expense to income or amount of fire losses paid may decrease with changing fire losses, but its amount per member will doubtless remain as now. This is now only 5.66 cents per member of those sharing its protection.

## MORTALITY FUNDS.

*Receipts.*

Initiation fees from October 1, 1890, to January 1, 1892.....	\$395.00
Assessments.....	1,789.34
Interest.....	6.19
<b>Total receipts.....</b>	<b>\$2,191.54</b>
Balance on hand October 1, 1890.....	164.98
<b>Total.....</b>	<b>\$2,355.52</b>

*Disbursements.*

Paid six death benefits (\$250).....	\$1,500.00
Paid seven death benefits (\$100).....	700.00
Paid one death benefit (\$50).....	50 00
Local expenses.....	22.91
Sundries.....	.85
<b>Total disbursements.....</b>	<b>\$2,273.76</b>
Balance on hand January 1, 1892.....	81.76
<b>Total.....</b>	<b>\$2,355.52</b>

The total expense of management was only \$23.76, which was 1.09 per cent. of the amount contributed by the members and 1.05 per cent. of the amount of death losses paid. For every dollar paid by the members they received \$1.03 cents in the form of death losses paid. The excess of this exhibit was due to the heavy losses by the grippe of 1891. Of course, this excess on this side of the balance must, in succeeding years, be made up by extra assessments. The only facts to be specially noted is the small ratio of expense.

#### SICK BENEFIT FUNDS.

Of the moneys belonging to this fund a part is kept in the hands of the local treasurers and the balance is transferred to the care of the executive committee and makes up the central fund of the order. This central fund is, however, only a sort of clearing house between the several unions. Nearly all the money is received and disbursed from the local unions. A little comes into the treasury of the central fund direct, and in the same way some little expense is recorded from the central fund that does not appear upon the books of the local officers. The following exhibit omits all moneys which appear upon the statements of both local and central officers. Where it thus appears twice it is credited to the local unions.

#### NET INCOME OF CENTRAL AND LOCAL SICK BENEFIT FUNDS.

Dues, local unions.....	\$5,046.97	
Dues, central fund.....	15.45	
		\$5,062.42
Initiation fees, local unions.....	\$694.50	
Initiation fees, central fund.....	5.00	
		\$699.50
Interest and fines, local unions.....	\$14.24	
Interest, central fund.....	13.80	
		\$28.04
Income not itemized.....		28.39
Total income.....		\$5,816.35
<i>Disbursements.</i>		
Sick benefits.....	\$4,970.19	
Paid physicians.....	865.75	
		\$5,835.94
Benefits received by members.....		
Salaries and expenses of officers, local....	\$153.02	
Salaries and expenses of officers, general fund.....	16.00	
		\$189.02
Current expenses, local.....	\$32.42	
Current expenses, general fund.....	1.30	
Printing.....	28.50	
		\$62.24
Total expense of management.....	\$231.26	
Total disbursements.....		\$6,067.24
Excess of disbursements over income....		250.89



*Resources.*

Cash resources October 1, 1890, less deficits, local...	\$975.05	
Cash resources, October 1, 1890, less deficits, central fund.....	660.52	
		\$1,635.57
Cash resources, January 1, 1892, less deficits, local..	\$995.51	
Cash resources, January 1, 1892, less deficits, central	389.17	
		\$1,384.68
Cash resources reduced.....		\$250.89
Members in the fund July 1, 1891, 698; July 1, 1892, 716.		

The expense of management was 3.98 per cent. of the total income for the year, and 2.96 per cent. of the benefits returned to the members. For every dollar expended during the year by the members of this fund there was received in return, on an average, \$1,003. The excess of disbursements over income explains the nature of the ratio, but the essential fact to be noted in the exhibit is as with other insurance funds the small ratio of expense.

## RESERVE FUND.

This fund, as with others of the furniture workers, is divided into two porportions, the local and international. Out of this fund are paid the strike benefits and kindred disbursements that arise with emergencies.

*Receipts.*

Contributed by members, central fund	\$3,401.35	
Contributed by members, local funds	1,847.29*	\$5,248.64*
Received from former unions.....	\$99.73	
Received in interest, etc.....	120.60	\$220.33
Total receipts for the reserve fund		\$5,468.97

*Disbursements.*

Expended for strike benefits, central fund.....	\$3,460.09	
Expended for strike benefits, local fund.....	2,025.70*	\$5,485.79*
Added to reserve fund, central .....	\$161.59	
Reduced reserve fund, local.....	178.41*	
Reduced reserves, all funds.....		\$16.82*
Amount in reserve fund January 1, 1892, central .....	\$2,951.52	
Amount in reserve fund, January 1, 1892, local.....	3,294.87	
		\$6,246.39

Membership of the order January 1, 1891, 4,778; January 1, 1892, 6,410. As this is the fund of the whole order there is no

\*The reports for the strike expenditures and receipts for one of the five periods, of three months each, covered by these figures, were not complete. The figures given above and marked by (\*) are only approximately correct. The fault is not so much in the reports as that the Bureau lacked one of the preceding quarterly reports of the order.

account of expense in connection with it. The expense of administering strike benefits, as that of the general business of the order, is all met from the general fund which now remains to be considered.

## GENERAL FUND.

In addition to the specific dues and assessments for this fund provided by the constitution, there were levied, during the fifteen months covered by the other exhibits, special assessments for the eight hour work day agitation, for the American Federation of Labor and other purposes. The total receipts and disbursements for the general fund are shown by the following exhibit:

<i>Receipts.</i>			
Dues.....	\$3,414.83		
Constitutions, charters and proceedings	510.40		
Agitation for eight hour day.....	1,314.32		
Assessments for American Federation of Labor.....	163.29		
Convention assessment.....	37.35		
Journal.....	423.49		
Contributed by members, total.....		\$5,863.68	
Officers' expenses from other funds.....	\$64.00		
Interest.....	5.00		
Advertisements.....	128.84	\$197.84	
Total receipts.....			\$6,061.52
<i>Disbursements.</i>			
Journal.....	\$1,197.27		
Agitation for eight hour day.....	1,564.42		
Federation of Labor assessment.....	162.00		
Federation of Labor dues.....	248.07		
Expended to advance the principles of order.....		\$3,222.76	
General printing.....	\$895.29		
Officers and committees salaries, etc....	1,303.50		
Expenses of convention.....	769.90		
Sundries.....	162.00		
Expenses not reported.....	225.01		
General expenses of management.....		\$3,420.54	
Total disbursements.....			\$6,643.30
Excess of disbursements.....			\$581.78
Amount on hand October 1, 1890.....	\$674.18		
Excess of disbursements.....	581.78		
Balance on hand January 1, 1892....			\$92.40

The foregoing exhibits show how economically the several insurance funds of a trade union can be administered in connection with the regular management of its trade affairs. The unions have a certain quantity of work for their officers to perform and a definite amount of expense without the labor of directing a single insurance benefit such as the furniture

workers have in their organization. The extra labor and expense involved in the management of sick, death and other benefits is very slight. This is shown by the percentages of expense in the four benefits of the order under consideration.

Those expenses may, however, be looked at in another light. It is often charged against trade unions by their enemies that the officers of such unions are supported in idleness and that all the money paid them is thrown away. The union, according to the statement of these enemies, gives nothing in return for the funds contributed for its support by its members. If this statement is true, then the only good done by them is in the administration of these insurance features which some of them, as the furniture workers, possess. In that case it is unjust to consider these insurance funds by themselves. They must be studied in connection with all the expenses of management of the several orders. This report seeks to present the facts about the financial management of American trade unions in all possible lights. It has shown the small ratio of expense of the furniture workers insurance when that insurance is considered apart from its trade management. All the funds of that order are presented together in the following exhibit. In that exhibit the union is treated as an organization for securing certain insurance and other benefits for its members. In this way it may be compared with any business corporation existing for selling insurance or other benefits such as the furniture workers give to their members. Comparing, in this way, it can be seen whether the union is managed wisely and economically as a whole when judged by the standards of the commercial world. The following exhibit presents a statement for the fifteen months ending January 1, 1892, of the total funds of the furniture workers' union.

*Receipts.*

Contributed by members:

In tool insurance fund.....	\$701.75	
In mortality fund.....	2,185.37	
In sick benefit fund.....	5,761.92	
In reserve fund....	5,248.64	
In general fund.....	5,863.68	\$19,761.36

Received from other sources:

From mortality fund.....	\$ 6.19	
From sick benefit fund.....	54.43	
From reserve fund.....	220.33	
From general fund.....	197.84	\$478.79

Less moneys reported in two funds.....		\$64.00
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Total miscellaneous receipts.....		\$414.79
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Total of all receipts of union.....		\$20,176.15
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*Disbursements.*

In insurance benefits and other objects of the order:

Fire losses paid.....	\$283.50	
Mortality benefits paid.....	2,250.00	
Sick benefits paid.....	5,835.94	
Strike benefits paid.....	5,485.79	
Printing journal, and kindred objects...	3,222.76	
		<hr/> \$17,077.99

For miscellaneous expenses:

In tool insurance.....	\$70.55	
In mortality insurance.....	23.76	
In sick benefits insurance.....	231.26	
General expenses of management.....	3,420.54	
		<hr/> \$3,746.11
Less moneys reported in two funds.....	64.00	
Total expenses of management.....		<hr/> \$3,682.11
Total expenditures of the union....		<hr/> \$20,760.10
Excess of expenditures over receipts....		<hr/> \$583.95
Total cash resources on hand Oct. 1, 1890		<hr/> \$13,518.11
Cash reserves reduced.....		<hr/> 583.95
Balance on hand January 1, 1892.....		<hr/> \$12,855.90

The average amount contributed per member was \$4.14. The average expense per member was \$0.58 and the average amount to the credit of a member in the reserve fund was \$2.69. The average distributed in benefits, printing journal and kindred objects was \$3.58. The expense of management was 18.23 per cent. of the amounts contributed by the members and 21.50 of the sums distributed in benefits and for other objects of the union. The latter was 86.37 per cent. of the contributions of the members.

The foregoing exhibits are compiled from the quarterly reports of the union printed in the official journal. In the proceedings of the eighth convention of the union are given a brief summary of the receipts and disbursements of the order for the four years and three months from July 1, 1886, to October 1, 1890. The receipts and disbursements for the general fund are given in detail. For the other funds are presented a partial statement. The amounts of receipts and disbursements are not given separately. A statement of the sums disbursed in those funds are given. The expense of managing those funds are included in the main or general fund. That summary presents the following statements of the business of the order for the given years.

*Receipts.*

From July, 1886, to October, 1890:	
Contributed to the general fund.....	\$13,206.96
Contributed to the sick benefit fund.....	16,294.17
Contributed to the mortality fund.....	9,600.00
Contributed to tool insurance fund.....	7,228.25
Contributed to the reserve fund.....	12,907.20
	<hr/>
Total contributed by members.....	<hr/> \$59,636.58

*Disbursements.*

Expenses of management.....	\$9,132.84	
Printing and dispatching the journal.....	4,874.10	
Advancing the cause of labor.....	648.50	
Sick benefits paid.....	14,866.86	
Paid physicians.....	2,491.16	
Mortality benefits paid.....	9,600.00	
Tool insurance paid.....	7,628.25	
Strike benefits paid.....	7,959.22	
		<hr/>
Total disbursed.....		\$57,200.93
Less contributed by other organizations for their expenses.....		1,698.00
		<hr/>
Total expended for the order... ..		\$55,502.33

The \$1,698 deducted from the sum of disbursements was paid by local unions Nos. 7 and 19 for their share of the office expenses for services rendered them apart from the general affairs of the order. This should be deducted also from the expense of management given in the first line of disbursements. Making that deduction, we have as the net expense of management for the order \$7,434.84. This is 12.47 per cent. of the total amount contributed by members. It is 15.47 per cent. of the \$48,068.11 paid out in benefits to members and for the publication of the journal, etc. This sum expended for benefits, etc., is 80.96 per cent. of the total amount contributed by members to the union.

None of the foregoing exhibits include the sums collected and disbursed by the local unions in addition to the foregoing sums managed in the name of the international union. These sums raised and disbursed by the local unions differ with the various towns in which they are located. They vary also with the passing exigencies. A union in a town with a strike on its hands will always pay out more money than one whose members are free from all labor complications. The Journal of the union gives for three quarters from October, 1890, to January 1, 1892, the reports of the local union No. 7, of the city of New York, with a membership of 1,826. These reports give a full statement of all moneys received and disbursed by the local, but it does not, in all cases, separate the moneys which have already been reported in the funds of the international. The exact amount of money which the members of this union have contributed, in addition to their payments to the general organization, cannot, therefore, be stated with perfect exactness. It is approximately, for the period of fifteen months, given in the first exhibits \$2.90 for each member. Of this amount about \$2.15 were paid out for management expenses and the balance, \$0.75, were disbursed for local strike benefits and other means of advancing the good of the members or of the order. Adding these sums to the ones obtained as the average for the international we have, as the total average amount contributed by a member of this organization to its funds from October, 1890, to January, 1892, \$6.04. Of this amount \$2.73 was the approximate amount disbursed per mem-

ber for expenses of management. For benefits returned to members and for printing the Journal and for kindred expenses for the objects of the order, there were paid out per member in this period the sum of \$4.23. These expenses were 38.63 per cent. of the amount contributed by the members. They are 64.54 per cent. of the amount returned to the members in benefits, the Journals, etc. These benefits returned are 60.08 per cent. of the amount contributed by the members.

The foregoing exhibit, in which all the funds of this union are massed into one, and also the one given last, in which the affairs of the New York local are united to those of the order as a whole, are manifestly unfair towards the furniture workers. They gather the benevolent and insurance funds of a few with the general or expense funds of five times their number. This produces an apparent percentage of expense of management far in excess of the actual facts in the case. The actual expense of administering the tool insurance, the sick and the death benefits, were given in a previous place. The average of the three insurance funds shows an expense account of only about three per cent. of the sums returned to the insured. This per cent. corresponds with that deduced from the experience of the typographical union and is less than one-third of the German sick insurance expense of administration. But the arrangement of the several funds of the international and local union, referred to as unjust and unfair, was made to show the meanest possible exhibit of a trade union affairs. Such an exhibit still makes a showing to the advantage of the union when it is compared with those which show the management expenses of American industrial accident and fire insurance corporations. This fact can be seen by comparing the percentages last given for the furniture workers with those previously stated under other unions for the various classes of insurance corporations.



## IX. THE IRON MOLDERS UNION OF NORTH AMERICA.

In this organization the members of each local union pay, for the general objects of the order, a monthly contribution of forty cents. This money, as soon as collected, is forwarded to the general treasurer, and a duplicate account thereof is sent to the general secretary. Upon the receipt of this monthly tax the general treasurer distributes it among the funds of the order as follows: Sixteen per cent. goes to the benefit fund, twenty-six per cent. to the monthly fund, and the balance, fifty-eight per cent., to the strike fund. The executive committee, in case of an emergency, can draw from one fund and place the money so drawn to the account of another. The funds thus transferred must, however, in proper time, be returned to its original fund. The moneys, with the exception of small sums, must be deposited by the treasurer in the bank to the credit of the several funds. It can be drawn thence only upon the joint order of the president and trustees. The small sums retained in the hands of and subject to the disposal of the treasurer are for the purpose of meeting the transient calls or orders upon that officer. Both the treasurer and all other officers of the union, into whose hands comes any of the money of the order, are required to give suitable bonds for its safe keeping.

From the monthly fund are drawn, in various ways, the money for the payment of all expenditures, excepting the death benefits and strike expenditures. From the strike fund is paid to members out of work, by reason of any labor disturbance sanctioned by the general officers of the association, a weekly allowance of \$7 to married men and \$5 to single or unmarried men. Out of the benefit fund are paid all death and disability claims. The rule of the order relating to those claims is as follows: "Upon the death or permanent disability of a member (which permanent disability shall consist of total blindness, paralysis, the loss of an arm or leg or both,) the secretary shall draw an order on the treasurer for \$100, which sum shall be paid, forwarded to the heirs of the deceased or to the disabled member as soon as the proper papers bearing on the case are received. A member, having received the disability benefit, shall not be entitled to the death benefit." To be entitled to these benefits a person must have been a member in good standing at the time, and for at least one year.

The official reports of the iron molders give separate statements for each of the funds previously mentioned. In the exhibits of the receipts and disbursements of the order, given in this report, those separate funds are grouped together. The

figures given in each column represent the receipts and disbursements for periods of two years, each ending with the month of July in the year of the biennial convention.

RECEIPTS.	1888.	1890.	1892. <sup>a</sup>	Total.
Monthly tax.....	\$52,602.15	\$61,156.96	.....	.....
Received on cards .....	2,682 15	3,691.50	.....	.....
Cash for strike fund.....	35,516.25	57,969.28	.....	.....
Miscellaneous. ....	‡321.90	375.50	.....	.....
Total income.....	\$91,123.15	\$123,193.24	\$132,682.55	\$346,998.94
DISBURSEMENTS.				
Funeral benefits.....	\$16,350.50	\$21,964.00	\$15,590.50	\$53,905.00
Strike benefits.....	33,876.05	67,946.78	85,192.12	187,014.95
Journal.....	4,231.80	6,164 21	*6,000.00	16,396.01
Federation of labor tax....	300.50	1,120.77	1,851.10	1,421.27
Federation of labor as'sm'nt .....	.....	250.00	.....	250.00
Total for objects of order	\$54,758.85	\$97,445.76	\$108,633.72	\$260,838.33
Expenses of convention....	11,386.45	13,664 27	.....	.....
Expenses of president's office	3,138.77	3,090.95	.....	.....
Expenses of secretary's office	6,478.55	7,198.13	.....	.....
Miscellaneous.....	3,524.23	6,322.44	.....	.....
Total expense of management.....	\$24,528.00	\$30,275.79	*\$36,718.99	\$91,522.78
Total disbursements....	\$79,286.85	\$127,721.55	\$145,352.71	\$352,361.11
Excess of receipts.....	11,836.30	.....	.....	.....
Excess of disbursements....	.....	4,528 31	.....	.....
Balance on hand, all funds..	29,013.78	24,485.47	.....	.....
Percentage of income used for expense of management	26.92	24.57	27.68	26.37
Percentage paid for objects of order used for expenses	49.88	30.09	33.79	35.09
Percentage of income paid for objects of order.....	60.09	79.10	81.80	75.17

\$Including discrepancy of \$6.00 between reports of secretary and president.

\*Estimated; (see text) (a) for 19 months to Jan. 31, 1892.

In the foregoing table the figures of the column marked 1892 include the receipts and disbursements of the order for only the nineteen months ending January 31, 1892. The molders did not hold a convention for 1892, and hence there are no published proceedings as for previous biennial periods. The figures given for the nineteen months are taken from a circular letter issued to the members of the craft March 3, 1892. That report did not give the cost of publishing the Journal separate, but included it with other expenditures. To make the comparisons the same as with the other periods the cost of the Journal was estimated at \$6,000, and that sum, taken from the

total expenditures given in the report, making the total expenses of management as above. All the other figures for the period are given as found in the circular letter.

The molders union have two locals in the State—one in Minneapolis and one at Brainerd.

From the foregoing exhibit of the business management of the iron molders it is found that for every dollar contributed by the members seventy-five cents are disbursed in their interests for some of the various objects of the order. This result accomplished may be compared with that of the standard or investment life insurance companies doing business in the state of Minnesota. These companies, from 1872 to 1891, inclusive, received from the citizens of Minnesota in premiums the sum of \$15,124,580. They returned to them in losses paid, etc., \$5,943,166. For every dollar paid by the policy holders to these companies in Minnesota there were returned to them about thirty-nine cents or a trifle more than one-half of that disbursed for its members by the iron molders.

In the year 1891 there were reported to the Minnesota Insurance Department seventy-two co-operative life, casualty and endowment societies. Those companies received in that year from their members \$20,729,877, and paid claims to the amount of \$15,037,685, and disbursed, for expenses of management, \$5,858,005. For every dollar contributed by their members, these associations disbursed twenty-eight cents in costs of management, or more than did the iron molders. These insurance associations are mutual societies, in many respects resembling the Iron Molders' union. They alike are supposed to elect their officers by vote of the members, and to direct the business in accordance with the will of the majority of those interested. As a matter of fact the members of the trade unions have a far greater voice in the direction of their business affairs than do the members of these mutual insurance associations. The officers of the mutual insurance societies are popularly supposed to represent a higher business ability than is secured for the directors of the unions. And yet the figures demonstrate that the iron molders manage their insurance and other benefits and transact all their difficult trade affairs for a smaller relative margin of expense than is done by these societies whose only business is that of insurance. The molders pay smaller benefits than the average sum insured by these mutual societies. To be equally successful they would be entitled, from the business standpoint, to a larger margin of expense than these other associations. The fact that its ratio of expense, to sums disbursed for the objects of the order, is less than theirs, is a double testimony of the economy of their methods of administration.



## X. THE GRANITE CUTTERS' NATIONAL UNION OF THE UNITED STATES OF AMERICA.

In the last revision of the constitution of this union its objects are said to be: "To encourage a regular apprentice system, and a higher standard of skill; to cultivate feelings of friendship among the craft; to assist each other to secure employment; to discourage 'piece' work as tending to degrade the trade; to secure adequate pay for our work; to furnish aid in case of death, and to assist, to the best of our ability, disabled members; to endeavor, by legal and proper means, to elevate the moral, intellectual and social condition of all our members, and to improve our trade."

Each year the members vote upon the proposition for holding a delegate convention. If the vote is in favor of holding such convention it is held; otherwise not. In case no convention is held a special auditing committee meets and examines the accounts of the secretary-treasurer, and their report is then sent to every member. The union publishes a monthly periodical devoted to the interests of the craft. The revenues of the order are derived from the sums received as subscriptions and advertisements of this paper, from a monthly tax and special levies or assessments as occasion may call for the same. Members over 55 years of age are exempt from all dues of the union excepting such as may be necessary for the maintenance of the death benefits. In the same way members sick or out of work for over a month are excused from the payment of those dues. From the funds of the order there were paid, in the year 1891, covered by the financial exhibit herewith given, a death benefit of \$125 to the legal heirs of a deceased member in full standing. For a deceased brother, who was in arrears with his dues not to exceed three months, there was provided a funeral benefit of \$25 payable to his heirs.

For members and unions out on strikes are voted sums, from time to time, as the exigency of the case and the state of the treasury of the union seem to warrant. Local unions cannot order a strike without the consent of the national union, and that body is not to give their consent to such a movement until its executive officers have exhausted all possible ways of avoiding such a trade dispute, at least all ways consistent with justice and a regard for the rights and interests of the brothers interested.

Out of the funds of the union, members out of employment and desiring to travel to other points in search of work, are given a loan upon the guarantee of at least two fellow-craftsmen in good standing in the order. The fines levied by the national union upon its local unions and its members are more numerous and many times heavier than is the case with the average of other American trade unions. This fact is evidence of the powerful organization of the order and of the strong hold which it has upon the confidence and respect of its members. The national union is very republican in all its methods.

The policy of referring all important questions relating to the affairs of the order to a vote of the members makes the national union very democratic. It takes away from the officers the exercise of arbitrary power, and, if an error is made in the union affairs, it must be charged up to the account of the members and not of the officers. The following is the statement of the receipts and ordinary disbursements of the order for the fiscal year ending October 31, 1891. In the expenditures here given no reference is made to loans to local unions or branches, or premiums paid for government bonds purchased.

Received in dues, levies, etc.....	\$40,372.87
Receipts of printing fund.....	3,129.37
<b>Total receipts of the union.....</b>	<b>\$43,502.24</b>
<b>Disbursements:</b>	
From printing fund, for Journal.....	\$3,212.19
<b>From general fund:</b>	
Strike pay.....	\$7,515.05
Funeral claims.....	7,855.00
Law expenses.....	4,890.96
American Federation of Labor.....	64.96
Postage on Journals.....	84.89
<b>Total disbursed for objects of order.....</b>	<b>\$23,643.05</b>
General expense of management.....	\$2,778.41
Printing.....	3,493.77
Rent, office expenses, etc.....	410.03
Stationery, postage, etc.....	384.94
Telegrams, express, etc.....	321.44
Delegation expenses.....	962.29
<b>Total expenses of management.....</b>	<b>\$8,350.88</b>

At the close of the year covered by the foregoing report the union had 149 branches or local unions, with an approximate membership of 9,700. Of that number about 8,500 were in good standing. There were sixty-three deaths in the order for which funeral benefits were paid as above. The amount of loans to members, which were outstanding at the end of the year, was \$2,546.88. Of that amount \$665, owing to death, leaving the trade, etc., was practically a dead letter, and thus there was a balance of collectible loans outstanding of \$1,881.88. At the close of the fiscal year there was a balance on hand in the treasury of \$12,851.94 in the general fund and \$159.05 in the printing fund. To these amounts should be added the amount of premium paid for the government bonds in which the funds were invested. That premium was \$1,188.25.

The averages for the year were as follows: Contribution per member \$5.11; disbursed for objects of the order \$2.78; paid for expenses of management \$0.98. The percentage of receipts used for expenses of management were 19.20. The percentage of sums disbursed for the objects of the order thus used in expenses were 35.32; and the percentage of receipts disbursed for objects of the order was 54.35. The grand officers added to the reserve fund 26.30 per cent. of the receipts or a total of \$11,541.22.

As the ratios above given between the receipts and disbursements of the granite cutters are substantially the same as those of many other unions previously passed in review, it will suffice to note this fact, and for comparisons with financial corporations refer the reader to the preceeding pages of this part of the report.

## XI. THE JOURNEYMEN BAKERS' AND CONFECTIONERS' INTERNATIONAL UNION OF AMERICA.

This organization was founded in January, 1886, at Pittsburg, Pa. Since that time it has held an annual convention each year. The original constitution adopted at Pittsburg has, however, been the basis of the present one. That constitution declares the objects of the order to be as follows: "The union aims at the promotion of the material and intellectual welfare of all workmen in the baking trade.

First. By organization.

Second. By education.

Third. By the reduction of the hours of labor.

Fourth. By gradually abolishing such evils as may prevail in the baking trade.

Fifth. By establishing labor bureaus wherever possible.

Sixth. By assisting members in legal causes, in matters concerning the union.

Seventh. By agitation in favor of independent labor politics.

Eighth. By agitating the abolishment of night-work."

In addition to the foregoing statement of objects and aims of the Bakers' union, the constitution of the order has a long preamble. That preamble voices an antagonism of labor against capital. This is quite different from the sentiment of most of the unions whose constitutions have been passed in review in this report. The cause of the antagonism found voiced in the constitution of the bakers is doubtless to be found in the debased and ignoble condition of the average journeyman baker in our largest American cities before the organization of this union. Prior to that time many causes had conspired to make the lot of the average working baker in those cities anything but an enviable one. There had almost everywhere grown up a custom requiring journeymen bakers to sleep and take their meals in the establishment of their employers. This custom and allied factors led, in the course of years, to ever increasing hours of toil until, in the majority of shops in the larger cities, the men worked from sixteen to eighteen hours out of every twenty-four. The men slept either in their work rooms or in some underground or unhealthy quarters. Nothing was done to make the work or sleeping rooms either pleasant, agreeable or healthy. The custom of requiring the men to board and sleep in the establishment of their employers, not only led to long and irregular and unreasonable hours, it tended to break up the home life of the employes, and to es-



tablish among them a very low state of morals. This tendency was aided, in the largest cities, by the growth of what were called "Bakers' Homes," or saloons acting as employment agencies for the craft.

These "Homes" amassed fortunes by preying on the men and assisted in the tendency brought about by the other factors described, to a moral degeneracy among the craft. As the result of all these circumstances the bakers, of all crafts, saw the most ignoble side of capital and very little of its beneficent and helping influence in society. Hence, the tone of antagonism that grew up in the craft and which is in some degree voiced in the preamble referred to. The bakers' organization was called into being to fight those ignoble conditions which once so largely prevailed in the ranks of the workmen of that trade. The old condition, against which the organization is a practical rebellion, must be considered in judging the ideas of society held by this craft, and also in measuring the methods adopted by the union in waging its industrial battles. Those battles have been, in a large degree, successful, considering the situation under which the men labor and the obstacles against which they are obliged to contend. In over half of the cities they have succeeded in uprooting the "Baker's Homes" or saloon employment agencies. In many they have put an end to sleeping in the workroom or in a basement room adjoining the same. They have everywhere secured shorter and more regular hours of toil. Out of these changes has arisen a general improvement in the moral tone of the craft. From twenty-five to fifty per cent. more of the journeymen bakers are married and support homes of their own than ten years ago. The victories of the bakers have therefore been victories of the home over the saloon and all that is allied thereto. All this should be taken into account in passing upon the money balances of the union. Here are some things which do not appear in any tables of figures because they represent realities more valuable than dollars and cents and scales of wages.

The union is patriotic, being one of the few which requires all members, before joining, either to be citizens or to have applied for citizenship in the land. The union publishes an official paper, both in the English and German language. The revenues of the international are derived from the sale of charters and a per capita tax of twenty-five cents a month upon each member in good standing. A union cannot order a strike without the vote of three-fourths of its members. The international, in the event of a strike in a local body, grants such aid as the executive committee decide to be necessary or available from the resources of its treasury.

The order seeks to gather quite a body of statistics relating to the craft. Among the subjects about which they seek to gather reliable data is that of the hours of daily toil. In the report for 1890 it is said that the average number of hours in the various unions for the first five days of the week is 10.36,

varying from 9.44, the lowest, to 12.53, the highest. The average hours from Friday to Saturday were 11.49, varying from 9.59 to 16.09. Minneapolis has the credit of maintaining the longest hours in both cases, and St. Paul very near the head of the same unenviable list, with 11.28 hours work for five days, and 12.51 for the other day. Since the date of the foregoing report the local unions in the two cities have made a successful effort for the reduction of the hours of toil.

January 1, 1891, there were 91 local unions affiliated with the international in good standing. The number of members at that time is not given. The international makes use of the union label to aid its members in their struggle for recognition and advancement. Great numbers of these labels have been used, and dishonorable men have also forged the same, and this has led the international to considerable litigation to defend or maintain their right to control this trade mark of the union.

The financial statement for the calendar year 1891 shows the following facts:

The receipts were.....	\$16,123.12
DISBURSEMENTS.	
Publishing periodicals.....	\$8,813.43
American Federation of Labor.....	198.07
Strike benefit.....	500.00
Label expenditures.....	644.00
Total for objects of the order.....	\$10,155.50
Expenses of management.....	\$3,433.03

The percentage of receipts used for management expenses was 21.9. That which was disbursed for the objects of the order was 62.9. The percentage of money paid for objects of the order expended in management expenses was 33.2.

## XII. THE HORSE COLLAR MAKERS' NATIONAL UNION OF THE UNITED STATES.

This union was organized in the year 1887, and is numbered among the progressive although small national labor organizations. It has twenty-one local unions in affiliation. The exact membership is not given in their reports. The constitution now in force was revised at the Baltimore convention in the year 1891, and went into effect the same year. The aims of the organization, as set forth in the preamble to its constitution, are as follows: "To elevate the craft; and in order to increase the intellectual and moral worth of every individual, we propose the following measures:

First. By gratuitously furnishing employment.

Second. By mutual pecuniary aid in case of strikes, lock-outs, sickness, and death.

Third. By defending members involved in legal difficulties consequent upon the faithful discharge of their official duties to the union.

Fourth. By issuing a trade journal defending the interests of the union of the trade.

Fifth. By prevailing upon legislatures and upon Congress to secure the prohibition of child labor under fifteen years. The establishment of a normal day's labor to consist of not more than eight hours per day for all classes, and to prohibit the system of letting out by contract the convict labor in prisons and reformatory institutions. The legalization of trade unions and the establishment of bureaus of labor statistics."

The union holds biennial sessions of a convention in the interest of the whole order. These conventions assemble on the first Monday of June every alternate year. The revenues of the national union are derived from a per capita tax of twenty-five cents a month upon all the members of the local unions in good standing. Of this tax five cents a month per member is set aside as a reserve fund to be used in the event of strikes. The local unions are not allowed to receive money from the national for the support of strikes unless they had previous to the strike obtained the consent of the officers of that body.

The union pays a funeral benefit for members of \$100. The union also publishes a journal as the official organ of the order and for the dissemination of information about the state of the trade in all parts of the country. The information given in this journal is of a character to greatly assist members out of work and desirous of obtaining the same. Local unions are authorized to loan their members small sums, not to exceed \$10.00

At the biennial convention in 1891 the treasurer reported, for the preceding two years, receipts amounting to \$4,572.49, and disbursements of \$4,350.43. No statement is given about the details of these receipts or disbursements. The receipts for the year ending June 1, 1892, were reported to be \$2,061.70 and the disbursements \$2,283.75. The annual report does not give details, but these have been obtained approximately from the monthly reports published in the Journal. They are as follows:

<i>Receipts.</i>	
Contributed by members.....	\$2,061.70
<i>Disbursements.</i>	
Funeral benefits.....	\$500.00
Strike benefits.....	478.00
Labels.....	188.77
Journal.....	248.76
American Federation of Labor.....	54.52
Total for objects of the order.....	\$1,470.05
Expenses of management.....	813.70
Total disbursements.....	\$2,283.75

In the foregoing exhibit there is a possible error in the case of the strike disbursements. In compiling the exhibit one monthly report was missing and there is a possibility that the strike expenditures are greater than stated above and the expenses of management correspondingly reduced.



### XIII. THE INTERNATIONAL BROTHERHOOD OF BRASS - WORKERS.

This brotherhood, one of the latest additions to American trade unions, was organized at New Haven, Conn., August 7, 1890. At that time the representatives of the craft adopted a constitution and declared that the objects of their order were as follows :

“The reduction of the hours of labor, which would afford an opportunity for the unemployed to procure employment, and also give the members of the craft time to improve their social and mental condition.

To protect its members through its established benefit funds, whereby members when sick will receive \$5.00 weekly benefits, and at death their family or heirs will receive \$100.

The education of its members, through the publication of a monthly journal, *The Brass Worker*, on all things pertaining to the labor question, and also through interesting and instructive articles on all branches of the trade, thereby assisting the members to keep thoroughly informed on the progress of the trade in all its branches.

To cultivate co-operation among the members and branches of the craft in all matters pertaining to their welfare and advancement.

To urge the enactment of laws protecting the interest and welfare of the wage workers.

To prevent the employment of children under fifteen years of age.

To aid in the establishment of a uniform system of apprenticeship.

To arbitrate all difficulties that may occur between members and employers.”

The brotherhood holds representative meetings or conventions each year on the third Tuesday in August. The revenue for the maintenance of the brotherhood is derived from a monthly per capita tax of forty cents per member, the sale of charters and supplies, from subscriptions for the *Brass-Worker*, and from special assessments if the regular revenue of the brotherhood prove insufficient to meet the demands upon it by the terms of the constitution. Twenty-five per cent. of the per capita tax is deposited in what is called the assistance fund, for the purpose of assisting members while on strikes or locked out. This fund can be used for no other purpose. Twenty-five per cent. of the per capita tax is deposited in what is called the benevolent fund for the payment of sick benefits to members. This fund can not be used for any other purpose. Fifty per cent. of the per capita tax is deposited in what is designated as the general fund. This fund is used for defraying the general expenses of the international brotherhood.

The rules of the brass workers are very explicit upon the subject of strikes. When the members of the brotherhood, in any shop, have any grievance with their employers, they shall

try to have the same settled by arbitration. Failing, the matter is then left to the local lodge of the order who shall try to have it settled in the same way. If the local lodge fails in securing a settlement by arbitration or otherwise, the executive committee of the international makes an effort in the same direction, and a strike can be ordered only after these three different efforts to obtain a settlement by arbitration or otherwise.

From the benevolent fund is paid the sick benefit to members. This is \$5.00 a week. It is not paid for a longer period of time than thirteen weeks. The death benefit of \$100 is paid from special assessments levied upon the brotherhood for that purpose. All questions relating to the affairs of the brotherhood must be submitted to the members for their decision. All questions are thus settled by the principle of the *referendum* as with the cigarmakers.

#### XIV. THE COOPERS INTERNATIONAL UNION OF AMERICA.

This is one of the smallest and most recently organized of the international unions in the United States. It was organized at Titusville, Pa., in November, 1890, at which time there were present delegates from eight local unions. At the convention held September, 1891, the order had affiliated with it twenty-three local unions with a membership of about one thousand. The aims and objects of the men organizing this union may be gathered from the preamble to the constitution adopted by them. It is as follows:

‘For the purpose of promoting unity of ideas and action among the Coopers of America, and joining them together for mutual protection, so that each and every member of the several local unions may be benefited thereby, the Coopers International union has been organized and consists of such delegates from such local unions of America as may indorse the constitution and by-laws of said international union, and will pledge themselves to use every effort to secure, by legitimate means, the benefits that may be derived through co-operation with each other on all matters affecting our trade; and to that end we devote our attention to the following subjects:

First. To make industrial and moral worth, not wealth, the true standard of individual and national greatness.

Second. To prohibit the employment of children under fifteen years of age.

Third. To gain some benefits of labor saving machinery by a gradual reduction of the hours of labor.

Fourth. To use all lawful and honorable means in our power to abolish the system of contract convict labor in the different states in which it may exist.

Fifth. To demand the enforcement of the foreign contract labor law, and the proper protection of our American mechanics as against imported pauper labor.

Sixth. To demand the repeal of all conspiracy laws that in any way abridge the rights of labor organizations.

Seventh. That we encourage the adoption of proper apprentice laws governing all branches of mechanical industries, and believe that such laws would tend to elevate the standard of American mechanism.

Eighth. To demand better sanitary conditions for coopers working in the different packing and provision houses, oil houses, and all places where a large number of men are employed.

Ninth. To secure from employers contracts recognizing the Coopers' International Union of North America regulating prices and making their shops strictly union shops.

Tenth. To co-operate with bosses, to advance the prices of making and the prices of barrels when possible and practicable.

Eleventh. To secure employment for our members in preference to non-union men.

Twelfth. To settle, by arbitration, all differences that may arise between employers and employes. To use all lawful and honorable means in our power to abolish the system of contract cooperage in different states in which it may exist.

Thirteenth. To encourage local unions to adopt proper apprentice laws governing all branches of our trade, as we believe that such laws would tend to elevate the standard of mechanism among coopers."

The international union meets in annual convention on the second Monday in September. The revenues of the union are derived from charter fees, the sale of supplies to the local unions, and from a per capita tax of ten cents a quarter upon each member in good standing. The rules adopted by the union call for the levy of special assessments in the event of a strike in any local union. This levy is at a rate of not to exceed ten cents per member per week for a period not to exceed five weeks. No strike benefit can be granted to a local union which has not been connected with the international for at least three months, and to no individual who was not a member in good standing at the inception of the strike. It will be noticed from the preamble that the international is pledged to the policy of arbitration in all labor troubles. In case of any local disagreement between employers and employes, the local officers shall, in each case, strive to have the difficulty settled by arbitration, and strikes are to be permitted only after all such efforts to secure such arbitration have proved unavailing. In the first ten months of the life of the international, before the convention September, 1891, the grand union received \$559.13, and disbursed, in expenses of management, \$450. The cost of administering the business affairs of the international were therefore about forty-five cents per member.



## XV. OPERATIVE PLASTERERS' INTERNATIONAL ASSOCIATION OF THE UNITED STATES AND CANADA.

This association, which has now been organized about ten years, had, January 1, 1889, a membership of 1,353. January 1, 1891, this had increased to 3,080, and at the first of the year 1892, it was 4,085. This association is composed of journeymen plasterers only. It states its objects to be: "To facilitate the organization of the trade it represents for mutual benefit and protection whenever it may be required, and to it shall belong the power to determine the customs and wages in regard to all matters in relation to the fellowship of the craft." The association is composed of representatives of the subordinate associations acting under its constitution. These representatives meet in annual convention on the second Monday in January, at which time are elected the supreme officers of the body, and the general business of the association transacted. The secretary-treasurer, who is the most important officer, is required to give bonds to the amount of \$3,000, for the safe-keeping of the money of the association which passes through his hands. This officer makes quarterly reports of money received and disbursed, and also an annual report to the convention. In 1889 the constitution provided for an annual per capita tax on the members of twenty cents payable semi-annually. Experience demonstrated that with such an income but little could be done to advance the real interests of the craft, and hence the association very wisely advanced this per capita tax at the session of 1892 to forty cents per annum. The proceeds of this per capita tax and the money received from charter fees are the sources of the income of the association. Ten per cent. of the per capita tax is monthly set aside for a defense fund. Into the same fund, at the end of the year, is transferred all funds in the general treasury which are not needed to defray the current expenses of the organization. Whenever the amount in the defense fund is less than \$1,000 the secretary-treasurer is directed to levy an assessment which will increase it to at least \$1,000, and not to exceed \$1,500. From this defense fund are to be paid all moneys disbursed for the support of strikes. By the rules of the association no subordinate body can receive any assistance in strikes from this fund unless it has been affiliated with the international at least six months. Subordinate bodies, which have been affiliated with the international for six months or more, if they desire assistance in a strike, must give at least thirty days' notice of the same to the executive board, and receive permission from that body before any final action by themselves in the matter. When a strike is ordered the members engaged do not receive any assistance during the first two weeks. At the expiration of that time they are entitled to receive a weekly strike benefit of \$5.00. Not to exceed two different subordi-

nate associations can receive strike benefits from the international treasury at the same time. If more than two worthy applications are made at the same season, the two shall have the preference which reached the headquarters first. If, for the maintenance of the strikes recognized by the executive committee the defense fund on hand should prove insufficient, the secretary-treasurer is authorized to levy such assessments as may be needed, from five cents upward, and these assessments may be continued during the time which the strike or lockout lasts. This separate defense fund is one created at the session of the convention for the year 1892.

The plasterers, like the other men in the building trades, are striving to increase wages and shorten the hours of daily toil. The strikes, in which they have been recently engaged, have nearly all been produced by this effort over wages and hours of labor. In the year 1891 this effort involved the association in twenty-three contests with their employers, in 22 of which they were successful. The international president, in speaking of the one failure, says it was due to a want of perfect organization in the subordinate body which was involved in the same. The receipts and disbursements of the association, for the two years 1890 and 1891, closing January 14, 1892, were reported as follows:

*Receipts.*

	1890.	1891.	Total.
Per capita tax.....		\$ 771.24	
Strike assessments.....		1,174.40	
Initiations.....		261.50	
Miscellaneous.....		128.13	
Total receipts.....	\$1,193.10	\$2,335.27	\$3,528.37

*Disbursements.*

	1890.	1891.	Total.
Paid for strikes.....		\$ 400.00	
Expenses of management.....	\$547.97	1,680.96	\$2,228.93
Total disbursements.....	547.97	2,080.96	2,628.93
Balance in treasury.....	941.88	1,197.19	
Average cost of management per member..	18 cents	40 cents	
Average contribution per member.....	39 cents	58 cents	

The wisdom of these contributions of the members can alone be determined by the results accomplished. With wages advanced or hours of toil reduced in 22 different cities, the small outlay by the members appears to have been more than justified. The same conclusion must be derived from the facts even though to the fifty-eight cents contributed to the general association be added any sum which was probably expended in the support of the local associations.

## RAILWAY EMPLOYES AND ACCIDENT INSURANCE.

The subject of accident insurance in some of its phases was discussed in part I of this report. In that part it was shown that a due regard for the lives and limbs of the employes should require a larger burden of financial responsibility for accidents to rest upon the employers. The policy of accident insurance was, under some circumstances, advocated, and attention called to the relative economy of management secured by the German and American accident insurance associations. The same general subject is recalled in this connection by reason of the intimate relation which it bears to the various unions of railway employes. The lives of those employes are constantly endangered while they are engaged at their usual avocations. The more serious of railway accidents are reported to the United States interstate commerce commission. But none of the minor accidents to employes are thus reported. The number of such accidents is of such proportions that on some roads one man in train service out of every two is annually hurt sufficient to require the aid of a surgeon. The equitable adjustment of the resulting financial loss is a subject which has never received the attention which it deserves. Many American railways are pushing various schemes of insurance to meet the needs which grow out of this enormous amount of casualty happening to their employes. The railway employes are also organized with a view of protecting themselves against the same contingency. As an introduction to the tables showing the receipts and disbursements of the several unions of railway employes, and thus exhibiting the protection afforded their members by these unions, there is herewith presented the following Table "A," giving the receipts and disbursements of the Travellers Accident Insurance Company, of Hartford, Conn. This is one of the best known and best administered of accident companies in the United States.

TABLE A.

Receipts, disbursements and ratios of the Travelers' Accident Insurance Company.

YEAR.	Premium Income.	Total Income.	Paid Policy Holders.	Expense of Management.	Per cent of total Income used for expenses.	Per cent paid policy holders used as expenses.	Per cent premium income paid policy holders.	Average amount of each Policy written in year.
1881. . .	\$1,684,750	\$1,761,530	\$714,008	\$830,508	47.15	117.70	42.38	\$1,974.00
1882. . .	1,819,313	1,909,433	749,462	924,542	48.42	123.36	41.19	2,142.00
1883. . .	2,064,389	2,175,757	864,255	991,740	45.60	114.74	41.86	2,127.00
1884. . .	2,068,967	2,200,158	950,588	1,038,818	47.22	109.28	46.43	2,326.00
1885. . .	1,974,339	2,074,873	885,012	1,001,615	48.27	113.17	44.27	2,244.00
1886. . .	1,943,644	2,055,173	888,738	1,021,390	49.70	114.92	45.77	2,300.00
1887. . .	2,102,257	2,216,443	943,760	1,081,479	48.78	114.48	44.89	2,498.00
1888. . .	2,190,507	2,299,111	1,059,505	1,254,033	54.54	118.36	48.37	2,725.00
1889. . .	2,096,132	2,195,159	1,026,552	1,829,483	83.34	178.21	48.97	2,805.00
1890. . .	2,128,523	2,228,796	960,650	1,107,541	45.20	115.40	44.63	2,839.00
1891. . .	2,104,427	2,197,413	986,453	946,593	43.07	95.95	46.87	2,941.00
Totals.	\$22,177,248	\$23,313,846	\$10,028,381	\$12,027,742	51.59	119.93	45.22	\$2,629.18



In this connection, for purposes of comparison, are also given for three years the receipts and disbursements of one of the best conducted and well planned railway relief associations in the United States, the Northern Pacific Beneficial Association. This association was called into existence by the management of the Northern Pacific railway in 1882. It has been instrumental in doing a great amount of good among the employes of that system of railroad. Its management is now jointly in the hands of the officers of the road and of the employes of the same. All employes on that system of roads are now required to contribute monthly to the support of the association. Their contributions are proportioned to the wages received in each individual case. The person receiving from \$25 to \$100 a month is required to give 50 cents monthly. The individual receiving over \$100 and less than \$200 per month pays \$1.00, and from those in receipt of a monthly income of over \$200, is collected \$2.00 a month. The amount due from the several employes are each month deducted by the company from the wages, and paid by them directly to the treasurer of the relief association. The additional cost of making out the pay roll required by this system, and all other costs of collection, are borne by the railway company. It does not appear in the annual statement of receipts and disbursements.

In return for these contributions thus collected from the employes they are entitled, if hurt by accident or disabled by reason of sickness, to free treatment and care in one of the two hospitals of the association. They are also entitled to free medical treatment if sick or injured. This is given by a corps of physicians located in all the principal towns through which the road passes. The association also pays its members a small weekly benefit during the time while they are disabled by any cause. This benefit varies with circumstances and the finances of the association. It also pays for the benefit of all deceased members a sum not to exceed \$75, to pay the expenses of burial. The following is a summary of the receipts and disbursements of this relief association for the past three years. The financial years covered by these reports end in each case with June 30th:

RECEIPTS.	1890.	1891.	1892.	Total.
Contributed by employes.....	\$83,372.72	\$95,887.00	\$92,042.06	\$271,301.72
Interest .....	3,491.42	2,043.62	3,167.18	8,703.22
Pay patients in hospital.....	1,166.81	930.25	1,629.05	3,726.11
Miscellaneous.....	50.00	6,340.14	54.64	6,444.78
Total receipts.....	\$88,453.95	\$105,201.01	\$96,992.87	\$290,647.83
DISBURSEMENTS.				
Accident benefits.....	\$2,526.75	\$3,674.50	\$3,908.75	\$10,110.00
Sick benefit .....	2,893.25	2,939.00	4,716.75	10,549.00
Death and burial benefit .....	6,251.82	4,358.70	5,474.95	16,085.47
Line service.....	28,472.37	32,985.52	37,898.00	99,355.89
Maintenance of hospitals.....	38,804.12	41,081.29	43,652.14	123,537.55
Total benefits disbursed.....	\$78,948.31	\$85,039.01	\$95,650.59	\$259,637.91
Investment account.....	6,160.59	600.53	1,815.63	8,576.75
Operating expenses and losses.....	3,264.27	3,510.18	7,985.95	14,760.40
Total disbursements .....	\$89,372.37	\$89,149.72	\$105,452.17	\$283,974.26

	1890	1891	1892	Total
Percentage of benefits disbursed used for expenses.....	4.13	4.13	8.35	5.68

The sums reported above, under the title of operating expenses, do not include the costs of collecting the money. This is borne by the railway company. But after allowing for a liberal margin for such costs, it will be difficult to find such a beneficent and widely extended charity administered at so small a margin of expenses as the above figures show for this association. Under the title "line service" is included the pay for the service of surgeons along the line, the medicine, special accident expenses, and kindred disbursements for the sick and disabled outside of the hospitals.

The reports of the association give each year the number of "accident and sick cases" treated by the physicians of the association or cared for in the hospitals. More "cases" are reported on the books than there are accidents actually occurring. This is due to the fact that some men moving, while disabled, from one town to another, are reported two or more times by different surgeons. But after allowing quite a margin for such duplication of reported "cases" the figures reported make quite a startling exhibit of accidents among railway employes. The greater portion of these "cases" are accidents so trifling in their nature that they are not reported to the interstate commerce commission. They are, however, of sufficient importance to require the attention of a surgeon, and are thus reported to the relief association. Below is shown the number of these cases as they are reported to the association. In the same connection is presented the number of employes in the pay of the railway company according to the annual report of the Northern Pacific Railway Company to the Minnesota railroad commission. From these two series of facts is calculated the ratio of employes in the service, on an average, to the accident "cases" reported.

<i>Accident Cases.</i>	1890.	1891.	1892.	Total.
Treated in the hospitals.....	643	714	595	
Treated at the surgeon's office.....	1,448	1,920	2,113	
Total.....	2,091	2,634	2,708	
Total number of employes in the service of the company.....	11,261	12,774	13,427	
Average number of employes to each accident "case" reported.....	5.36	4.85	4.96	4.72

It is worth while to compare these ratios with those secured by the interstate commerce commission for all the railways in the United States. For the year 1889 one accident was reported to that commission for every thirty-five employes, and in 1890 one for every thirty-three. The figures for the relief association of the Northern Pacific Railway, including all minor as well as the severe casualties, give from six and one-half to seven "cases" for every accident reported to the interstate commerce commission. Approximately the same, if not



a higher ratio, is shown by the other railway relief associations of the United States. In other words, the minor accidents or "cases" not reported to the commission are several times more numerous than the serious ones which are thus reported. The foregoing figures exhibit the ratio of accidents or "cases" to the whole number of employes. But over one-half of all accidents are suffered by the relatively small proportion of employes in the train service. If one would figure out the chance of one of this class of employes meeting with a minor casualty, allowance must be made for the ratio of such employes to the whole number of railway operatives. The report of the interstate commission furnishes the data for such a computation. The facts given in these reports would lead, from the data of the commission, to the conclusion that on such a railway as the Northern Pacific there are each year about three accident "cases" for every five employes in the train service. The ratio of minor accidents to the number of those employes is doubtless somewhat greater owing to the duplication of "cases" as has been previously explained. But after allowing a large margin for possible error to this cause there is left a ratio of accidents among the men in train service which is frightful to contemplate. The figures of that ratio are a tribute to the value and beneficence of such associations as this organized by the Northern Pacific. They tell something about the need and importance of the relief afforded by the various unions of railway employes.

## XVI. THE GRAND INTERNATIONAL BROTHERHOOD OF LOCOMOTIVE ENGINEERS.

This is one of the oldest existing American labor unions now in existence. It was organized at Detroit, Mich., August 17, 1863, as "The Brotherhood of the Foot Board." It was reorganized under its present designation at Indianapolis, Ind., August 17, 1864. The constitution originally prepared has been changed and revised from time to time to meet new exigencies and to embody the experience of the organization. All unions thus change their constitutions, which thus become the creation of years. The present constitution received its last general revision at the session of the biennial convention of the brotherhood, held at Atlanta, Georgia, in the month of May, 1892. In that constitution the brotherhood declares its objects to be: "More effectually to combine the interests of locomotive engineers, to elevate their standing as such, and their character as men."

The brotherhood meets in biennial convention on the second Wednesday in May. At those conventions the brotherhood transacts all business that is of general interest to the order as a whole. The brotherhood publishes a monthly journal in the interests of its members. This is furnished without charge to all members in good standing. The headquarters of the organization for the transaction of its routine business is at pres



ent located in the city of Cleveland, Ohio. The grand dues of the brotherhood are \$2.00 a year, and the fiscal year of the order begins at present on the first day of April. Formerly it began with the first day of September. The annual dues above mentioned and the receipts from the sale of charters and supplies make up the revenues of the grand lodge of the organization.

The brotherhood proper gives no regular insurance benefits in the event of sickness or death. It, however, annually distributes large sums to the needy and deserving in its ranks. Some of these charitable gifts are distributed from the treasury of the grand lodge and some from those of the local. Should a local lodge or division, as it is called, decide to assist a worthy brother or the family of a deceased member, it may take the needed funds from the local treasury or raise it by voluntary contributions, or by assessments upon the members, as the members may decide.

To be eligible for membership in the brotherhood an individual must be a white male at least twenty-one years of age and one who can read and write, and is of good moral character, temperate in his habits, and a locomotive engineer in good standing and in actual service. He shall be a member of no other labor organization, with the exception of the brotherhood of Locomotive Firemen. If, after becoming a member of the Engineers' brotherhood, he joins any other such organization, he shall be expelled from the order. For drunkenness, for engaging in the sale of intoxicating liquors, for neglecting his duty, or willfully injuring the property of his employers, a member shall be expelled. The brotherhood provides for the election of a grievance committee on every system of railways with which they are connected. It is the duty of this committee to settle all questions about wages, rules, etc., which may arise between their employers and the members of the brotherhood. If the local grievance committee cannot reach an amicable agreement, they shall call to their assistance the similar committee of the international, and all efforts made to reach an honorable and satisfactory understanding with the managers of the railroad upon which they are engaged. Nothing is said in the constitution or standing rules about strikes. The brotherhood makes the foregoing provision for the settlement about trade disputes with their employers. But very few occasions occur in which the officers of the order have not been able to effect a settlement of all difficulties with their employers. When no settlement is secured everything is practically left to the wisdom of the grand officers to direct, and the unwritten law of the brotherhood suffices to meet all emergencies of strikes, lockouts, etc., which have hitherto occurred.

If a member of the brotherhood is hurt while in the discharge of his duties as an employe of a railway company, or meets with an accident of any kind, he is required to make a complete and true report of the same to his local division. For a willful misstatement in such reports a member shall be expelled.

The brotherhood, in 1867, organized, in connection with the order, a Mutual Life Assurance Association for insuring the lives of locomotive engineers who were members of the brotherhood. Membership in this insurance association prior to 1892 has not been obligatory upon the members in the organization. Only a portion of the members in the brotherhood joined the insurance society. Thus, in May, 1892, there were 14,457 insured persons out of a total membership in the order of 33,000. The old rule relating to insurance was changed at the session of the biennial convention for 1892, and hereafter every person joining the brotherhood must take out at least one insurance policy of \$1,500 unless he is unable to pass the required medical examination. Members who insure can receive as they elect, one, two or three policies of insurance in the amount of \$1,500 each. The member insured, in case of the loss of a hand, foot, loss of eyesight, or injury or disease producing a total disability, to follow the calling of the locomotive engineer, receives the full amount of his insurance guaranteed in his policies. The same amount is paid to his heirs in the event of his death.

For the year ending August 31, 1890, there were 129 deaths in the membership of the mutual insurance association. Three persons were totally disabled and 119 claims paid. The total amount disbursed in payment of those claims was \$322,500. The costs of collecting the money to meet these claims was \$10,469.66. There were received for admission fees \$1,251.42, and for interest on deposits \$930.50. The expenses of management were the sums paid for collecting, as above, and \$1,680.70 for officers salaries, printing, stationery, and sundries. The total costs of raising and disbursing this \$322,500 to the policy holders was therefore \$12,150.36, or 3.77 per cent. of the amount paid the policy holders.

This percentage expresses the cost of managing life insurance in connection with a trade union in addition to the legitimate expenses of that union. It is less than the cost of the management of the admirably directed beneficial association of the Northern Pacific Railway. In the case of the greater number of the trade unions there is no way of separating the cost of managing the insurance benefits from the other expenses of the union. The only comparison possible to make between such unions and the insurance companies are those wherein all expenses are credited to the insurance business. On that basis the trade unions all present a balance sheet, making a better showing than the regular insurance companies. The locomotive engineers are one of the few unions which keep a separate account of general and insurance expenses. The expense of managing the insurance funds is a small per cent. of the money disbursed to policy holders. It is only one-fourteenth part as large relatively as with the Equitable of New York, one of the best managed of the regular life insurance companies of the United States. The expenses of the Travelers



given in a preceding table for ten years were 119.93 per cent. of the amount returned to the policy holders. This is more than thirty times the corresponding ratio of the Engineers Mutual Insurance Department.

In the last year the average cost of \$1,000 of insurance was about \$28 on an average for all the members. The number of deaths from September 1, 1890, to March 31, 1892, was 253, and the number totally disabled 10. In the period from September 1, 1887, to March 31, 1892, there were 896 deaths among the insured resulting from disease. There were, in the same length of time, 521 death and disability claims paid which were the direct result of accident. This latter was thirty-four per cent. of the 1,417 claims paid. From the organization of the relief association to March 31, 1892, the department had disbursed in insurance relief the sum of \$3,778,169.61.

The brotherhood at the present time (November 1, 1892,) has 504 local divisions and a membership of about 33,000. Its financial year which once closed August 31 now closes March 31. In the following schedule, showing the receipts and disbursements of the brotherhood for the years since 1887, it should be noted that for the first three years the figures are given for a calendar year of twelve months, beginning September 1. For the year 1892 are furnished the amounts received and disbursed from September 1, 1890, to March 31, 1892.

#### RECEIPTS AND DISBURSEMENTS OF THE LOCOMOTIVE ENGINEERS.

##### *Receipts.*

YEAR.	Grand dues.	Journal.	Supplies.	Old accounts.	Advertising.	Interest.	Totals.
1888.....	\$37,961.70	\$2,337.32	\$4,555.36	\$13,041.51	\$1,475.33	\$1,860.30	\$61,231.52
1889.....	39,786.05	1,483.43	5,681.91	14,725.25	1,295.00	1,657.70	64,629.34
1890.....	34,969.25	711.68	4,728.37	14,793.98	1,631.00	1,288.35	58,295.67
1892*.....	78,742.93	2,026.47	8,632.43	23,923.82	3,180.00	2,158.05	118,663.70

\*Eighteen months.

##### *Disbursements.*

YEAR.	Salaries.	Printing.	Appropriations.	Charities.	All other expenses.	Totals.
1888.....	\$12,500.00	\$17,520.90	\$20,000.00	\$9,445.53	\$2,361.75	\$71,690.08
1889.....	12,500.00	17,845.50	26,995.88	14,063.40	3,324.00	74,728.78
1890.....	12,500.00	16,897.37	2,570.00	17,880.51	2,447.79	52,295.67
1892*.....	24,858.46	33,456.68	1,437.87	18,597.47	3,920.15	82,270.83

\*Eighteen months.

The figures given above do not admit of an analysis such as has been applied to most of the other trade unions. The only comparisons concerning the economy of management are those already made with reference to the insurance department.



## XVII. THE ORDER OF RAILWAY CONDUCTORS OF AMERICA.

This organization was instituted at Mendota, Ill., July 1, 1868. It was reorganized at Columbus, Ohio, December 5, in the same year. At the latter mentioned time and place the grand division of the order was created, a constitution and by-laws adopted and grand officers elected. The original name of the organization was the Conductors' Brotherhood. This name was changed to the present designation at the eleventh annual session of the grand division. The constitution at present in force was adopted in the year 1891. The supreme authority of the order is vested in the grand division, which is composed of the grand officers and delegates from the local divisions. The last constitution makes provision for the union of the railway conductors with the other organizations of railway employes. It declares that in case the organization of railway conductors enters into an alliance or federation with other orders for the purpose of mutual benefit, the laws governing the federation shall be mailed to every member and such laws shall be binding on the order and all its members so long as the alliance or federation continues in force.

The order publishes a monthly paper called "The Railway Conductor." This is in charge of the grand secretary-treasurer, who, in connection with the grand chief conductor, makes all contracts for publishing the same.

The fiscal year of the order commences with January 1. The revenue of the grand division is derived as follows: (1.) A fee of \$60.00 for a charter and supplies for each of the new divisions established. (2.) A fee of \$1.00 for every division card issued by the grand secretary. (3.) A fee of \$1.00 for every credential issued to an honorary member. (4.) In addition to the fees above mentioned the members in good standing at the beginning of the year, and all who are subsequently initiated or re-instated, are required to pay as annual dues the sum of \$2.00. These grand dues may be increased at any time by the grand division, provided that such increase shall in no case exceed \$2.00.

The officers of the grand division are required to give bonds for the faithful discharge of their duties and for the safe keeping of all moneys entrusted to their keeping. That bond in no case can be less than \$25,000.

The moneys derived from the fees and yearly dues already referred to go into a fund known as the general fund. From it are paid the costs of publishing the Conductor and also all the costs of general management in the order. By the action of the convention in 1891 a protective fund was created for the support of strikes in case such labor troubles occur. Each member of the order is assessed 50 cents a quarter for the creation of this fund. This assessment, as with the railway trainmen, is to be continued until the amount in hand in invested assets amounts to \$100,000. Should an emergency occur

in which the protective fund on hand proved insufficient, the grand trustees may order such additional assessments as they may decide necessary. The rate of pay to a striking member is fixed at \$50 per month, and the rules and regulations for the government of strikes are substantially the same as with the railway organizations already reviewed. In all strikes of the order the grand chief conductor is recognized as the leader and has the authority to command the entire resources of the protective department.

The order of railway conductors has connected with it a mutual benefit department. Prior to July 1, 1891, membership in this department was optional to all the members, and up to that time only about one-third of the order belonged to the department. This relief department is under the control and government of the grand division of the order. Its object is to aid and benefit disabled members and the friends of the deceased members. Any member in good standing may be insured in the benefits of this department upon passing a satisfactory medical examination. The certificates of insurance given are each for \$1,000. A member under thirty years of age may take not to exceed five of these certificates. One between thirty and thirty-eight may take four. One over the latter age and under forty-five is entitled to take three. To members between forty-five and fifty are allowed only two shares. Those over fifty at joining can receive but one certificate of insurance. A member need not take more than one certificate unless he so choose.

The amount of insurance covered by these certificates is paid in the event of death or total disability, as with the benefits of the locomotive firemen and the trainmen. Assessments are levied from time to time upon the policy holders at the rate of \$1.00 per share or certificate of \$1,000. This assessment is all disbursed for the payment of death and disability claims. For the payment of the costs of administering this insurance fund there is levied, as there may be required therefor, a special expense assessment in an amount which may be decided upon by the officers of the grand division. By the action of the grand division, in the year 1891, all persons, after July 1, of that year, who should join the order, should be required to take out one share or certificate in the insurance, provided they could pass the medical requirements of the order. This change will doubtless aid in strengthening the order.

In the case of the locomotive firemen and the railway trainmen the expenses of management for the insurance funds are included with the expenses of the organizations as a whole. There is with these organizations no way of exactly determining the costs of managing those funds apart from the other expenses of those brotherhoods. The conductors and the locomotive engineers keep the insurance funds apart from their general resources, and hence can be definitely ascertained the additional cost of managing insurance in connection with such trade unions.

The receipts and disbursements for the order and for the insurance department are given separately and together, and also averages, percentages, etc., in tables A, B and C.

TABLE A.

Receipts and Disbursements, etc., Insurance Department.

Years.	Membership.	Receipts.	Paid insurance claims.	Management expenses.	Average paid per member.	Average insurance claim paid	Average cost of management.	Percentage of receipts used in expenses.	Percentage of receipts paid in insurance benefits.	Percentage of insurance benefit in insurance expense.
1886	4,586	\$93,968.50	\$93,078.00	*	\$20.40	\$20.29	*	*	99.05	*
1887	4,768	134,166.66	129,500.00	\$5,427.29	28.13	27.16	\$1.13	4.05	96.52	4.19
1888	4,676	164,782.55	155,000.00	7,723.79	35.24	33.14	1.65	4.68	94.07	4.98
1889	4,852	167,147.03	157,500.00	9,834.86	34.45	32.45	2.02	5.88	94.22	6.24
1890	4,519	154,253.25	145,000.00	7,678.70	34.13	32.08	1.69	4.98	94.00	5.29
Tl's.	4,680	\$724,317.99	\$680,078.00	\$30,664.64	\$30.95	\$29.06	\$1.31	4.27	93.90	4.51

\* Expenses paid from general fund.

TABLE B.

Receipts, Disbursements, etc., General Fund.

Years	Membership.	Receipts.	Publishing Railway Conductor.	Managing expenses.	Average amount paid per member.	Average expense per member.	Average cost of Railway Conductor per member.
1886	10,734	\$21,765.74	\$7,297.76	\$19,790.68	\$2.02	\$1.84	\$ .68
1887	11,947	33,644.68	7,001.45	23,579.32	2.81	1.97	.59
1888	13,224	25,337.76	5,898.66	21,205.16	1.91	1.60	.41
1889	13,720	28,277.84	10,159.45	26,342.02	2.05	1.92	.74
1890	15,769	35,889.09	14,650.92	26,555.85	2.27	1.68	.93
Tot'ls	.....	\$144,915.11	\$45,008.24	\$117,473.03	\$2.21	\$1.80	\$ .67

TABLE C.

Years.	Total average contribution of insured member.	Total average amount returned to insured member.	Total average expense of management of insured member.	Percentage of contributions used in expense.	Percentage of contributions returned to insured member.	Percentage of amount returned to member used in expense of management.
1886	\$22.42	\$20.97	\$1.84	8.20	93.50	8.77
1887	30.94	27.75	3.10	10.00	89.69	11.16
1888	37.15	33.58	3.25	8.74	90.39	9.68
1889	36.50	33.19	3.92	10.74	90.93	11.81
1890	36.40	33.01	3.37	9.25	90.68	10.21
Average	\$33.16	\$30.86	\$3.11	9.35	91.04	10.33

It will be seen from an examination of table A that the cost of collecting and disbursing \$100 in insurance benefits involved an expense of \$4.57. This is a trifle more than was expended by the locomotive engineers for the year 1890 and is a little less than the average expense of the Northern Pacific Beneficiary Association for three years. The experience of the railway conductors, the locomotive engineers, typographi-



cal union, and the furniture workers practically agree in their expense of collecting and disbursing insurance funds. Their ratio of expenses of management to sums collected and disbursed for insurance purposes only, varies only from about three to five per cent. of the sums disbursed. A study of the tables of these various unions makes it evident that within certain limits the ratio of expense is lessened in proportion to the amount of money collected for insurance purposes. The engineers collect relatively the largest amounts per member and their expense ratio is among the lowest given. Doubtless these larger sums collected by the engineers explain the slight superiority which their management shows over that of the conductors.

In table B are found for five years the average contribution and disbursement of a member of the conductors who is not a member of the insurance department. In table C is presented the same general averages for one who is insured. The averages of table C are found by adding together the corresponding averages of tables A and B. Table C shows that for the average insured person there is disbursed in expenses of administration \$10.33 for every \$100 collected and disbursed for insurance. The \$10.33 includes all the general expenses of the order, insurance and otherwise.

This ratio of expense for the conductors is one-eleventh of the corresponding ratio of the Travelers Accident Insurance for ten years. The conductors, in collecting and disbursing \$145,000 for insurance in 1890, paid out, for costs of management for the same, \$7,678.70. To have collected and disbursed the same sum for insurance purposes would have required on the margin of expense shown by the Travelers for ten years over \$173,000. This is \$165,000 in excess of the amounts employed by the conductors for that purpose. This excess is sufficient to have paid all the costs of administering the general and insurance business of the order several times over. The fact is that the order could spend nearly six times its present sums paid for expense and still secure its insurance cheaper than by purchasing its accident benefits of this or any other corporation for selling accident insurance.

### XVIII. BROTHERHOOD OF RAILROAD TRAINMEN.

The organization of this body of railway employes was effected at Oneonta, New York, September 23, 1883. The aims and objects of the brotherhood are set forth in the preamble to the constitution as follows:

"To unite the railroad trainmen; to promote their general welfare, and advance their interests, social, moral and intellectual; to protect their families by the exercise of a systematic benevolence, very needful in a calling so hazardous as ours, this fraternity has been organized.

"Persuaded that it is for the interests both of our members and their employers that a good understanding should at all times exist between the two, it will be the constant endeavor of

this organization to establish mutual confidence and create and maintain harmonious relations. Such are the aims and purposes of the Brotherhood of Railroad Trainmen."

The grand lodge, which meets biennially in convention, has supreme authority in all matters connected with the brotherhood. To the general funds of the grand lodge each member is required to pay an annual tax of \$1.50. From the proceeds of this tax and other miscellaneous receipts of the order are paid all the ordinary or current expenses of management, together with the cost of publishing the official journal. If, for the payment of the disbursements, the tax of \$1.50 proves insufficient, the grand officers are authorized to levy a special tax, such as may be needed in the emergency. In this way was secured the money for the purchase of an outfit for a printing office to do all the work of the brotherhood in the line of printing and binding.

In addition to the general fund above mentioned the brotherhood maintains a beneficiary insurance fund guaranteeing \$1,000 in the event of death or total disability of a member. The total disability entitling to this benefit is one which unfits the member from longer following his vocation. If this consists of total blindness or the loss of a foot or hand, no further evidence is needed than that which shows this fact. In the event of a claim for disability, such as comes from permanent ill-health, the brotherhood requires such medical evidence as satisfies its officers of the disability claimed. The funds for the payment of these beneficiary claims are derived from the proceeds of regular assessments of \$2 each. These assessments cannot, however, be levied oftener than once a month.

The grand lodge meeting, in the year 1890, changed its constitution, and arranged for the establishment of a protective fund. This fund is to be used in the event of a strike for the benefit of such members of the brotherhood as may be involved in the same. Each member of the organization is required to contribute to this fund twenty-five cents a quarter. This twenty-five-cent quarterly assessment is to be continued until a permanent protective fund of \$100,000 has been created. The proceeds of this protective fund assessment must be invested in United States government bonds. When the amount thus invested reaches the limit of the sum mentioned, the grand officers are to suspend the collection of the assessments. In case of an emergency the grand officers can levy extra assessments for this fund, but such assessments shall at no time exceed \$2 a month. The amount in this fund, at the end of the year 1891, is shown in the receipts of table A. The brotherhood, in its history, has been involved in no great strike, and from its grand treasury has been paid no large sums for strikes. In fact, the general reports of the order make no mention of such payments. This fund is being raised, then, as a precautionary measure, and in the expectation that in the future it may help the brotherhood "as such funds have aided so many other trade unions" to avoid such labor disturbances. The rules of the



brotherhood provide, in the event of a strike, that the members involved shall receive nothing for the strikes which last less than two weeks. For those of longer duration the participating members receive a monthly strike benefit of \$35, the same to date from the beginning of the strike. The rules of the organization are framed with a view of preventing all avoidable strikes, and the members are not allowed to leave their employment without the order of the officers of the grand lodge.

The brotherhood provides for what is called the convention assessment. This is levied once in two years and is made sufficient to pay the expenses of the delegates and officers attending the biennial sessions of that body. The rules of the brotherhood permit the local lodges to raise among their members funds for the payment of local sick benefits. Very many of the local lodges thus maintain the payment of such benefits.

The brotherhood for some years has published a monthly journal, as the official organ of the organization. The printing and binding of this publication and the other printing of such a union as the trainmen involves a large annual outlay. With a view of lessening this expense for printing the brotherhood has established a printing office in which is done all this class of work for itself. This printing office has been fitted up with all the fixtures and appliances of a first class book printing house. All work is done on the basis of the eight hour day, and after paying the highest current prices for all classes of labor, the brotherhood have been able to save money on their work by this business enterprise. As this is the first attempt of the American trade unions to engage in any business in the least outside of their craft, its success may lead to efforts to widen the present field of usefulness of the unions.

The fiscal year of the brotherhood begins on the first day of September and closes on the last day of August. The receipts of the grand lodge are given in table A as also are the number of death and disability claims each year.

Of the 422 death claims paid in the two years ending August 31, 1891, 247 or 70.4 per cent. were the direct result of accidents. Of the 224 disability claims paid 199 or 88.8 per cent. were in the same way the results of accidents. Adding the death and disability claims together it is found that 496 or 76.7 per cent. were due to casualty. The foregoing are the *direct* results of accidents. If to this could be added the death and disabilities *indirectly* traceable to the hazard of the occupation, it would doubtless be found that nine-tenths of the money payments of the brotherhood for insurance benefits were for members who had lost their lives or sacrificed their health in the service of the public transportation of freight and passengers on our railways. The disbursements of the brotherhood are shown in table B. The averages per member and membership together with the percentages of receipts and disbursements are shown in table C.



TABLE A.—Receipts and Beneficiary Claims Paid.

FISCAL YEAR.	RECEIPTS OF GRAND LODGE.				Number of D'ths Assessed for.	Number of Disabilities Assessed for.	Total Number of Deaths and Disabilities.
	General Fund.	Beneficiary Fund.	Protective Fund.	Total Receipts Gr'nd L'dge			
1884-1885.....	\$10,294.09	\$10,528.00	.....	\$20,822.09	40	.....	40
1885-1886.....	9,977.74	42,561.00	.....	52,538.74	79	29	108
1886-1887.....	13,746.29	98,578.00	.....	112,324.29	92	82	174
1887-1888.....	21,934.36	123,471.00	.....	145,405.36	93	46	139
1888-1889.....	31,001.40	253,350.55	.....	284,351.95	171	77	248
1889-1890.....	39,147.15	273,970.00	.....	313,117.15	183	93	276
1890-1891.....	54,341.55	368,288.00	\$9,505.50	432,135.05	239	131	370
Totals.....	\$180,442.58	\$1,170,746.55	\$9,505.50	\$1,360,694.63	897	458	1,355

TABLE B.—Disbursements.

Fiscal year.	DISBURSEMENTS, GRAND LODGE.						
	Amount paid in death and disability claims.	Cost of official journal.	Total for objects of order.	Salaries and traveling expenses of gr'nd lodge officers.	Other expenses of management.	Total management expenses.	Total disbursements.
1884-1885...	\$6,596.82	.....	\$6,596.82	\$4,174.45	\$2,131.80	\$6,306.25	\$12,903.07
1885-1886...	44,976.63	.....	44,976.63	4,358.68	8,647.32	13,006.00	57,982.63
1886-1887...	99,100.00	.....	99,100.00	7,173.36	7,425.25	14,598.61	113,698.61
1887-1888...	123,106.25	\$3,301.39	126,407.64	8,311.10	10,400.42	18,711.52	145,119.16
1888-1889...	253,518.00	5,749.93	259,067.93	9,828.66	13,949.52	23,778.18	282,846.11
1889-1890...	274,027.25	10,309.41	284,336.66	12,283.37	15,962.40	28,245.77	312,582.43
1890-1891...	368,637.05	23,828.16	392,465.21	14,833.48	17,522.35	32,355.83	424,821.04
Totals..	\$1,169,762.00	\$43,188.09	\$1,212,950.89	\$60,963.10	\$76,039.06	\$137,002.16	\$1,349,953.05

TABLE C.—Membership, Averages and Percentages.

Fiscal Year.	Membership at close of fiscal yr.	Average receipts per member.	Average paid for objects of the order.	Average disbursed in expenses of managm't	Perc'tage of receipts used for expenses.	Perc'tage of receipts paid for objects of the order.	Perc'tage paid for objects of the order used for expenses.
1884-1885	4,766	\$4.37	\$1.39	\$1.32	30.28	31.68	95.57
1885-1886	7,993	6.57	5.62	1.62	24.75	85.66	28.81
1886-1887	8,622	13.03	11.48	1.69	12.99	88.22	14.73
1887-1888	11,483	12.66	11.00	1.63	12.87	86.93	14.80
1888-1889	13,562	20.96	19.10	1.75	8.36	91.10	9.17
1889-1890	14,057	22.27	20.22	2.00	9.02	91.12	9.93
1890-1891	20,409	21.12	19.23	1.58	7.86	90.82	8.24
Averages.....	.....	\$14.43	\$12.58	\$1.66	10.07	89.14	11.30

It will be noted that the average expense per member has practically remained the same during the years shown in the tables. And yet the average sums disbursed for the objects of the order greatly increased. These figures enforce the deduction from the experience of the typographical union. Management of insurance funds in a good trade union adds but little to the average expense of administration per member.

Such unions are therefore the most economical agents for the collection and disbursement of such funds. The steady reduction in the percentage of expense to sums paid out for the objects of the order is an evidence of the business and economical management of the officers of this brotherhood.

No disbursements for strikes appear in the exhibit of the finances of the brotherhood since 1884. The average expense account for the seven years, shown in the tables, amounted to 11.29 per cent. of the sums paid out for the objects of the brotherhood. This average is much larger than it has been for the past few years. But on that basis, as compared with the Travelers, the brotherhood has saved in seven years, in the costs for collecting and disbursing its \$1,212,950, paid out for the objects of the organization, a sum total of about \$1,310,000, or as much as the members of the most powerful railway order ever lost in wages during any strike or lockout in which they had been involved.

#### XIX. SWITCHMEN'S MUTUAL AID ASSOCIATION OF NORTH AMERICA.

This body was organized in 1886, and its constitution revised in 1891. The objects and aims of the organizers may be gathered from the accompanying preamble to the constitution. They are there declared to be three, as follows:

“First. *Benevolence.* To unite and promote the general welfare and advance the interests—social, moral and intellectual—of its members. Benevolence, very needful in a calling as hazardous as ours, has led to the organization of this association.

Second. *Hope.* Believing that it is for the best interests, both of our members and their employers, that a good understanding should at all times exist between them, it will be the constant endeavor of this association to establish mutual confidence and create and maintain harmonious relations between employer and employe.

Third. *Protection.* By kindly bearing with each other's weakness, aiding, with our counsel, distressed or erring brothers, and to exercise, at all times, its influence in the interests of right and justice. The special object of this association is to raise a fund for maintaining the disabled brothers, and to care for the widow and orphans, and for the legitimate expenses of the association.”

The grand lodge offices are permanently located in the city of Chicago. The association holds an annual convention at such time and place as may have been agreed upon at the preceding session of the convention. The Switchmen's Journal, the official publication of the association, is published monthly. The funds of the order are the beneficiary, general, convention and special. The beneficiary fund is created for the purpose of insuring all members in case of death or total disability, in the amount of \$1,000. All persons joining the association must contribute to the support of this fund, unless they fail to pass

a satisfactory medical examination. The assessments for this fund are made in sums of \$2.00 from time to time, as the demands for death and disability claims call for the same.

From the general fund are paid the cost of publishing the Journal and all the expenses of administering the affairs of the association. Into this fund are paid all miscellaneous receipts, and also the proceeds of a yearly per capita tax upon the members. If the receipts from these various sources are insufficient to meet all the disbursements from this fund, the officers of the grand lodge are authorized to levy a special assessment to meet the deficiency.

The convention fund is a special levy made once a year for the purpose of defraying the expenses of the officers and delegates in attendance upon the sessions of the body from which it takes its name. Other special funds may be created from time to time at the discretion of the grand officers. In this way are collected all moneys paid for the support of strikes, for charity, etc.

Most of the local lodges of the association support a sick benefit fund. Out of this are paid moneys for the support of those temporarily disabled by accidents and by sickness.

The association has contemplated federation with the other railway employes, as can be seen from the following article from the last adopted constitution:

“SECTION 1. While this organization is connected by alliance or federation with any other organization or organizations for the purpose of mutual benefit, the laws governing such federation shall be furnished to every member, and such laws shall be binding on the association and its members so long as the alliance or federation is in force.

SEC. 2. No form of federation shall be recognized by this association except that governed by the supreme council of the United Orders of Railway Employes.”

The number of members of the association at the close of the fiscal year, September 1, 1891, was 6,453. The number at the beginning of the same year was 5,116. The average for that year was 5,785. The association paid during the year 136 death and 57 total disability claims. The amount paid on these 173 claims was \$166,000.

The receipts for the year were as follows: Beneficiary fund, \$171,712.56; general fund, \$25,384.00; special fund, \$1,449.50; total, \$198,546.06. The foregoing totals include the moneys on hand at the beginning of the fiscal year. For this same fiscal year, that closing September 1, 1891, the association disbursed \$166,000 for insurance benefits; special for charities and strikes, \$1,575.67; for publishing the journal, \$5,854.54. This was a total for the objects of the order of \$174,030.21. The expenses of management were as follows:

For salaries, \$11,529.13; for telegraphing, \$139.14; for expressage, \$115.55; printing, other than the journal, \$981.55; miscellaneous expenses, \$3,753.06, or a total of expenses of ad-



ministration of \$16,518.40. The total disbursements for the year were, then, \$190,549.23, leaving a balance on hand in the general fund of \$3,010.43, and in the endowment fund of \$5,-112.56.

The averages of the year are: For contributions of members, \$34.32; for amounts paid for the objects of the order, \$30.08; for expenses of management, \$2.86. The percentage of contributions of members used for expenses of management was 8.32; percentage of sums expended for objects of the order used in expenses of management, 9.49; percentage of contributions of members returned in sums paid for the objects of the order, 87.65.

In the published accounts of the deaths and disabilities paid in the year 1891 there is no analysis of the number of them due to accidents. Of the seventy-one death and disability claims allowed or ordered paid in the six months ending October 1, 1892, 51 or 72 per cent. were due to accidents. These figures show that the hazard of the switchman and of the member of the trainman's brotherhood are practically the same.

The average ratio of expense, etc., is about the same as with the other railway insurance orders. It is less than one-half of what Amasa Walker allowed as the minimum average expense in conducting a business enterprise. That margin of expense is only from one-twelfth to one-fifteenth part of what is paid out by the average American corporation doing an accident insurance business. It is also one-fourth part of the expense account of the German accident associations.

## XX. BROTHERHOOD OF LOCOMOTIVE FIREMEN.

This body of railway employes was organized at Port Jervis, N. Y., December 1, 1873. It was one of the first American labor organizations to introduce a perfect system of book-keeping in all its official records and to apply the principles of the business world to the transaction of all its affairs. Its methods have been models upon which many later labor organizations have builded and the influence of its officers for good has been felt in all that concerns the welfare of the toilers of America. As showing the aims and motives of the movement which, for the labor world, has found its centre of influence in the Brotherhood of Locomotive Firemen, there is here reproduced the preamble to its constitution:

"For the purpose of uniting locomotive firemen and elevating their social, moral and intellectual standing; and for the protection of their interests and the promotion of their general welfare, the Brotherhood of Locomotive Firemen has been organized. The interests of our members and their employers being identical, we recognize the necessity of co-operation, and it is the aim of the brotherhood to cultivate a spirit of harmony between them upon a basis of mutual justice. Realizing the fact that our vocation involves ceaseless peril, and that it is a duty we owe ourselves and our families to make suitable provision

against those disasters which almost daily overtake us on the rail, the necessity of protecting our interests as firemen, of extending to each other the hand of charity, and being sober, industrious and honorable men, becomes evident; and hence the brotherhood has adopted as its cardinal principles the motto: *Protection, charity, sobriety and industry.*"

The foregoing preamble is taken from the copy of the constitution as the same was amended at the biennial convention of the order September, 1890, and which went into effect February 1, 1891.

The grand lodge of the brotherhood is located at Terre Haute, Ind. In the office of the order in that city are kept all the official records of the brotherhood, and that town is also the headquarters of its most important officers. The grand lodge holds a delegate convention once in two years at such place as may have been previously selected. The fiscal year of the grand lodge begins on the first day of August and closes on the last day of July in each year. The grand secretary-treasurer is, in some respects, the most important officer in the brotherhood. He receives and disburses the moneys of the grand lodge, and for the faithful performance of his duties is required to give a bond for \$75,000. The brotherhood publishes a monthly magazine of ninety-six pages, which is furnished free of charge to all the members.

All members, upon joining the brotherhood, have to pass a medical examination, and are not admitted to the beneficial department unless they satisfactorily pass that examination. All members who can thus pass such examination must belong to the beneficiary or insurance department of the organization. Those thus becoming beneficiary members are by their membership in the brotherhood insured for the sum of \$1,500. That sum is paid to the member in his lifetime, if at any time he becomes totally disabled from following his chosen occupation. The same amount is paid to his legal heirs in the event of his death. The grand lodge keeps an account showing the standing of all its members, and no one is entitled to these insurance benefits of the order unless his dues are paid in full and he has otherwise complied with the regulations of the organization. The disability to entitle a member to the full amount of his insurance certificate consists of total blindness or the loss of a foot or hand. A member having received a total disability benefit is not thereafter entitled to a death benefit of the same amount.

The money to pay these death and disability insurance benefits is obtained from the regular contributions of the members. In the same way are obtained the moneys for the payment of all expenses of management and for publishing the magazine, and for all other purposes of the order.

The brotherhood, in its constitution and by-laws, provides for the contingency of trade disputes with their employers. It establishes regulations for the same. The main object of those regulations is to avoid strikes, if possible. The employes of a

railway belonging to the brotherhood are not allowed to go on a strike only as they have complied with the rules of the order which have been framed with the purpose of preventing such labor disturbances. In framing those rules, the brotherhood has gone farther than most unions. It provides, as a penalty for leaving work on an unauthorized strike, expulsion from the order. But while the organization is thus severe with members who leave their post of duty without the proper authority for so doing, it is ready to stand by them in strikes if, after examination, the officers of the grand lodge find no way of avoiding such a struggle. It is the duty of these grand officers, before ordering a strike, to exhaust all honorable means of accomplishing what the men justly desire from their employers. When a strike has been ordered by the officers of the grand lodge, the members thus thrown out of work are entitled to monthly strike benefits of \$40. The payments for the support of strikes are made from what is known as the special or protective fund. An examination of table B shows how small have been the disbursements from this fund, with the exception of two years, 1887-1889, on the occasion of the great strike on the Chicago, Burlington & Quincy railroad. After that strike the brotherhood started to provide a permanent strike fund, and for that purpose the constitution calls for an annual contribution from each member of \$3. This contribution was, however, collected only a short time, and by action of the convention of 1890, the clause of the constitution relating to this assessment, was suspended. At the time, there was in the treasury to the credit of the fund, nearly \$70,000.

The receipts for the grand lodge since 1880 are given in table A. In that table are also given the membership of the order at the end of each financial year and the number of death and disability claims paid in the years covered by the report. A more detailed statement of those receipts and also the disbursements is given for one year in the following exhibit for the years 1890-91:

<i>Receipts.</i>		
Grand dues.....	\$36,587.50	
Magazine.....	6,908.25	
Subordinate lodge supplies .....	10,638.90	
Beneficiary.....	361,183.00	
Advertising.....	2,166.43	
Special.....	14.00	
Total receipts .....		\$417,498.08
<i>Disbursements.</i>		
Magazine.....	\$22,019.97	
Grand lodge supplies.....	5,526.45	
Subordinate lodge supplies .....	1,133.30	
Salaries.....	21,043.15	
Miscellaneous.....	8,485.39	
Beneficiary .....	359,000.00	
Special.....	436.05	
Total disbursements.....		\$417,644.31



In table A, which is a summary of the receipts of the order since 1880, the receipts referred to above under "beneficiary" are given by themselves; the other receipts are grouped under the head general fund.

TABLE A.—Receipts and Membership.

Fiscal Year.	General Fund.	Special, or Protective Fund.	Beneficiary Fund.	Total receipts of Grand Lodge.	Membership at close of fiscal year.	Number of death and disability claims p'd
1880—1881	\$9,533.10	.....	\$11,813.75	\$21,346.85	2,998	25
1881—1882	15,229.75	.....	28,451.50	43,681.25	4,443	30
1882—1883	24,068.07	.....	52,848.00	76,916.07	7,337	61
1883—1884	33,885.25	.....	66,376.00	100,261.25	12,246	86
1884—1885	39,093.79	.....	146,960.00	186,053.79	14,694	122
1885—1886	38,954.88	\$14,457.00	235,509.60	288,920.88	16,196	146
1886—1887	24,815.15	24.00	221,446.00	246,285.15	17,047	163
1887—1888	44,555.59	228,962.35	211,792.00	485,309.94	18,278	145
1888—1889	46,197.43	241,033.30	297,789.75	585,020.48	17,087	186
1889—1890	43,088.98	125.00	273,210.00	316,423.98	18,637	165
1890—1891	56,301.08	14.00	361,183.00	417,498.08	22,460	209
1891—1892	68,773.93	.....	378,116.00	446,889.93	25,967	270
Total .....	\$434,943.90	\$484,615.65	\$2,273,671.25	\$3,193,260.80	.....	.....

TABLE B.—Disbursements.

Fiscal Year.	Beneficiary Fund.	Special Fund.	Cost of Magazine.	Total for Objects of the Order.	Expense of Managem't.	Total Disbursements
1880-1881	\$12,104.00	.....	\$3,188.15	\$15,292.15	\$4,884.31	\$20,176.46
1881-1882	23,937.00	.....	3,219.81	27,156.81	6,846.30	34,003.11
1882-1883	55,000.00	.....	5,785.54	60,785.54	7,672.32	68,457.86
1883-1884	77,035.00	.....	10,654.86	87,689.86	14,134.18	101,824.04
1884-1885	149,960.00	.....	12,375.48	162,335.48	15,799.82	178,135.30
1885-1886	227,900.00	.....	*15,000.00	242,900.00	25,266.82	268,166.82
1886-1887	225,166.50	.....	*16,000.00	241,166.50	19,285.14	260,451.64
1887-1888	217,500.00	\$220,033.10	*17,500.00	455,036.10	26,097.94	481,134.04
1888-1889	280,150.00	246,363.65	*17,000.00	543,513.65	36,134.33	579,647.98
1889-1890	247,500.00	428.75	*18,000.00	265,928.75	29,365.68	295,294.43
1890-1891	359,000.00	436.05	22,019.97	381,019.97	36,188.29	417,644.31
1891-1892	399,250.00	458.15	*25,000.00	424,708.15	33,379.87	458,088.02
Totals ..	\$2,262,398.50	\$467,722.70	\$165,743.81	\$2,907,532.96	\$255,055.00	\$3,194,431.19

\*Estimated.

In the foregoing table B. are given the disbursements of the brotherhood by years and the summaries thereof under the heads of "Expended for the good of the order" and expenses of management. The detailed disbursements already given for the years 1890-91 show what are included under expenses of management. That summary includes all that may be grouped under the heads of grand lodge supplies, subordinate lodge supplies, salaries, and miscellaneous disbursements. Under salaries are included the salary of the editor of the Magazine and in the miscellaneous are included some sums expended for the cause of labor apart from the brotherhood, as contributions to the American Federation of Labor, etc. The actual expenses of management, when compared with business corporations, are, at least, several per cent. less than the table B presents them. The table, as all the others in this report,

are taken from the official records of the union. There is one exception to the foregoing statement. The published reports of the brotherhood do not give, for all the years, the cost of publishing the Magazine. In those years in which that cost is not separately given it is estimated on the basis of the experience of other years. The years in which the cost of publishing the Magazine is thus estimated are marked in table B. with a star (\*). Those figures are arranged to show the working of the several bodies and not their comparative economy of management as contemplated in this investigation. The resulting error is always against the unions. This is true of the brotherhood, as of all the other organizations passed in review.

Both in the itemized receipts and expenditures for the year 1891, as previously given, is found the item "subordinate lodge supplies." These lodge supplies are purchased at wholesale by the grand lodge, and the cost from year to year appears in the disbursements of that body. They are then sold to the local bodies at an advance, and the amount obtained therefor appears among the receipts of the grand lodge. If reports of the local lodges could be obtained these sums would appear in the same as expenses. The real cost of these supplies and hence the real expense thereof to the members of the brotherhood is the amount paid therefor by the grand lodge. If reports could be obtained from the local bodies all these expenditures should appear, not as expenses, but as contributions for the support of the grand lodge. It is such duplications of the same matters which render it impossible to obtain the exact "expense of management" for more than a few unions. In studying these reports it should be borne in mind that the *actual expense of management of all the unions is less than is here given*. From tables A and B have been calculated the average contribution for each member for each year and also the average amount expended for the objects of the order and for the expenses of management. These averages are given in table C. In that table are also to be found the percentage of the receipts of the brotherhood disbursed in expenses, and also returned to the members as paid for the objects of the order, etc.

TABLE C.—Averages and Percentages.

FISCAL YEAR.	Average Contri- bution per Member.	Average Paid for Objects of Order per Mem- ber.	Average Ex- pense of Man- agement per Member.	Percentage of Receipts Used for Expenses.	Percentage of Receipts Used for Objects of the Order.	Percentage Paid for Objects of Order Used for Expenses.
1880-1881.....	\$7.12	\$5.10	\$1.63	22.88	71.63	31.94
1881-1882.....	9.83	6.11	1.54	15.68	62.19	25.26
1882-1883.....	10.48	8.28	1.04	9.97	79.02	12.62
1883-1884.....	8.19	7.17	1.15	14.09	87.46	16.12
1884-1885.....	12.67	11.05	1.07	8.49	87.25	9.79
1885-1886.....	17.84	15.00	1.56	8.75	84.07	10.40
1886-1887.....	14.45	14.15	1.13	7.83	97.92	8.00
1887-1888.....	26.55	24.90	1.43	5.38	93.76	5.74
1888-1889.....	34.23	31.81	2.11	6.18	92.91	6.65
1889-1890.....	16.98	14.27	1.58	9.28	84.04	11.04
1890-1891.....	18.59	16.96	1.61	8.66	91.26	9.48
1891-1892.....	17.21	16.36	1.29	7.46	95.04	7.86
Totals .....	\$16.18	\$14.26	\$1.42	7.99	91.05	8.77

In the exhibit of the expense of management given in table B are included no account of the average expenses of the local lodges excepting the relatively small cost of the lodge supplies furnished to those bodies by the grand lodge. To know the total cost of the brotherhood to one of its members the average disbursements and receipts of the local lodges must be added to the same averages for the grand lodge given in table C. Of the local unions a great proportion, in addition to the benefits of the grand lodge, pay their members a sick benefit of varying amounts and for different periods of sickness. As showing the approximate expenditures and receipts of these locals the following exhibit of those facts are presented for the Northwestern, or local lodge No. 82 of Minneapolis. That exhibit includes all the receipts and disbursements for the years covered by these local reports excepting loans to members and the repayment of the same and sums given in two different funds. The years covered by these exhibits are calendar years and not the same as the financial years of the grand lodge.

The averages obtained from the local lodge given, if added to the corresponding averages found in table C, will approximately show the cost of his order to the member and also the general expense of managing all the affairs of the organization. Such averages are to be found at the last end of the exhibit for the local lodge.

In the same connection are given the percentages for the combined local and grand lodges the same as shown for the grand lodge in table C.



Northwestern Lodge, No. 82, of Minneapolis. Receipts and disbursements for 1890 and 1891.

<i>Receipts.</i>	1890.	1891	Total.
Quarterly dues.....	\$2,375.17	\$3,175.10	\$5,547.27
Assessments.....	164.25	485.60	649.85
Admission fees.....	240.00	360.00	600.00
Grand dues.....	199.00	324.00	523.00
Miscellaneous .....	304.64	233.00	537.64
<b>Total receipts.....</b>	<b>\$3,280.06</b>	<b>\$4,577.70</b>	<b>\$7,877.76</b>
<i>Disbursements, general.</i>			
Beneficiary .....	1,952.00	2,138.00	4,090.00
Grand dues.....	206.50	316.00	522.50
Protective fund.....	243.75	.....	243.75
<b>Total paid grand lodge.....</b>	<b>\$2,402.25</b>	<b>\$2,454.00</b>	<b>\$4,856.25</b>
Balance or receipts for local affairs...	\$877.81	\$2,143.70	\$3,021.51
<i>Disbursements, local.</i>			
Sick benefits .....	\$452.50	\$563.88	\$1,016.33
Charity.....	30.75	13.55	44.30
Gifts to other organizations.....	6.00	.....	6.00
Expenses for legislation.....	.....	103.07	103.07
Local protective.....	.....	442.89	442.89
<b>Total paid for objects of the order</b>	<b>\$489.25</b>	<b>\$1,123.39</b>	<b>\$1,612.64</b>
Printing and supplies.....	\$111.35	\$40.95	\$52.30
Postage and stationery.....	16.75	21.25	38.00
Hall rent.....	96.00	99.50	195.50
Salaries and miscellaneous.....	323.19	450.28	793.47
<b>Total local exp. of management..</b>	<b>\$447.29</b>	<b>\$611.98</b>	<b>\$1,059.27</b>
<b>Total local disbursements.....</b>	<b>\$936.54</b>	<b>\$1,735.37</b>	<b>\$2,671.91</b>
Membership of lodge.....	137	194	.....
<i>Average receipts, etc., per member, local.</i>			
Receipts.....	\$6.40	\$11.05	\$9.13
Paid for objects of order.....	3.57	5.27	4.87
Expenses of management.....	3.26	3.12	3.20
<i>Average receipts, etc., per member, local and general.</i>			
Receipts.....	\$24.99	\$28.26	\$27.13
Paid for objects of the order.....	20.53	21.61	21.07
Expenses of management.....	4.87	4.41	4.64
<i>Percentages for local and general funds.</i>			
Percentage of receipts paid for objects of the order.....			77.7
Percentage of receipts paid for expenses of management.....			17.1
Percentages of sums paid for objects of order used for expenses of management.....			22.0

Lodge No. 82 pays a sick benefit of \$6.00 a week. The disbursements under that benefit have been given above for two years. Of the lodges connected with the brotherhood 90 support from their local funds similar sick benefits ranging in amount from \$1.00 to \$10.00 a week.

The grand lodge, at the close of the late fiscal year, had in its treasury \$11,563.94 to the credit of its general fund, \$2,411.95 to its protective fund, and \$37,607.75 to its beneficiary. In addition to the foregoing it has a specially invested protective fund of \$64,901.51.

The biennial reports of the brotherhood, in their statistics of death and disability claims paid, bear testimony to the dangerous character of the vocation of a railway fireman. In the last report there is given the causes of death in the case of each of the 377 deaths for which insurance benefits were paid; 205 of those 377 or 54 per cent. were due to accident. As very many of the members dying were, at the time of their decease, engaged at occupations other than that of a locomotive fireman, it can readily be seen that the deaths from accidents to those in the active service of the railways must be much greater relatively than the percentage deduced from the report.

In examining the averages for the receipts and disbursements for the grand lodge shown in table C, the same fact is to be noted to which attention has already been called in the case of the conductors and trainmen. The average expense remains substantially the same through the years, notwithstanding the added sums collected and disbursed for the objects of the order. This average for the firemen, for twelve years, was \$1.42 per capita per annum. The large number of years for which the figures are given makes the fact quite evident that the actual cost of handling insurance funds among the firemen and trainmen is but very little in addition to the other expenses of the orders. The average grand lodge expenses of \$1.42 for the firemen are less than those given for the Ancient Order of United Workmen, which were \$1.51 when the expenses of the two superior lodges, the grand and the supreme, are added together. The average expense of all the railway orders approximate this sum, and thus make substantially the same exhibit of expense as this large and well managed assessment life insurance association. The percentage of all receipts disbursed as expenses by the grand and supreme lodges of the Workmen was, in 1890, 7.1. The same average for the Firemen, for twelve years, was 7.99 per cent. In many years this percentage for the Firemen has been less than for the United Workmen. It is also the case with the other railway orders.

By the exhibit of the local lodge No. 82 of Minneapolis, the facts are presented which enables a just comparison to be made between the management of the railway orders and that of accident insurance companies. The sick benefit paid by that lodge, together with the disability benefit guaranteed by the grand lodge, fully meet all the ends secured by the policy of any accident insurance company. Combining these local and general receipts and disbursements as above, it is found that, for the past two years, for the average member of local No. 82, it cost, for every dollar disbursed for sick, death and disability benefits and for other objects of the order, 22 cents in expenses of management. This is about three-fourths of the 29 per cent. expended in the same way by the German accident insurance associations. It is less than one fifth of the 119 per cent. of the Travelers for the ten years shown in the table for that company. The Travelers is one of the most economical of



American accident insurance corporations. But while with the German and the Travelers no business is transacted by the management, or paid for out of the expense fund, but the direction of insurance affairs, it is otherwise with all these railway orders and the other trade unions. In the local expenses of all these bodies are included, on an average for the railway orders, \$1.00 a year for each member for the adjustment of wages and conditions of service between them and their employers. There are many other such disbursements included in the general and local expenses of the railway orders. The local expenses of all those orders in Minnesota vary but little from those shown for local No. 82 of the firemen. As showing the saving effected by this and allied railway organizations over the average accident insurance company, the following deductions are presented.

In table B is shown, in the financial years of 1887-1888 and 1888-1889, very large disbursements for the firemen under the special fund. These disbursements were the amounts paid out by the brotherhood by reason of the great Chicago, Burlington & Quincy Railway strike, the greatest strike in which the American railway orders were ever engaged. The total spent for that strike by the brotherhood in the two financial years referred to was over \$466,000, or nearly a half million of dollars. It is an immense sum to sink in such a strife as was that great strike. It meant, the world justly says, a fearful burden and tax, self-imposed on the members of the brotherhood. But in those two years the brotherhood disbursed, in death and disability benefits, over \$497,000 from the general fund. In the same two years the order raised and disbursed in local sick benefits and charities to the members many thousand dollars in addition. These, with the general death and disability benefits, make up a total of at least \$600,000. If this sum had been collected and disbursed with the same margin of expense shown by the reports of the Travelers, it would have called for a general expense account of \$700,000 for the two years. This is a sum sufficiently large nearly to pay all general and local expenses of management and all the strike disbursements in that period. The strike with its loss and waste came to an end after a struggle of sixteen months. The saving made in the insurance has been going on all the succeeding years.

Much discussion is found in the public press, from time to time, concerning the relative ability of capital and labor to meet all the losses resulting from the strikes and to recover from the effects of the same. When the loss is borne by the strikers alone, there can be no question but that capital has the advantage. But when that loss is distributed through a large organization, managed on business principles and with economy, as with the railway orders and similar trade unions, it is otherwise. The unions save their members each year, in the management of their insurance funds and otherwise, more than sufficient to pay the average burden of such strikes. This



saving, for the twelve years of experience of the brotherhood of firemen, shown in the accompanying tables, over the corresponding experience of the average of even the best accident insurance company of the United States, is nearly if not quite \$3,000,000, or sufficient to pay full wages for the whole brotherhood for quite a lengthy strike.

The general management of twenty of the leading American trade unions have here been passed in review and contrasted more or less in detail with that of the management of many business corporations. There has been found with all of those unions a high degree of economy and wisdom. The business methods employed to secure that general success affects for good all the members of the unions. Those methods aid in training the members of these organizations in all the qualities which contribute to make men better citizens and more valuable members of society. It is in view of this and allied facts that this report bases its recommendation offered in the introductory of this part, the recommendation that workingmen be guaranteed and by law protected in the same rights of free association now enjoyed by their employers. It was urged at the outset that such legislation but embodied the present practices of the best employers, those who had the least trouble and dispute with their workmen. The report here presented has exhibited the financial side of the trade unions and shows the good done and the saving effected by those unions. Possibly, yea probably, an investigation along other lines would show among them great diversity. Some unions like some employers follow a policy tending to strife, bitterness and public disorder. Others pursue a course leading to the opposite results. But the existence of such facts would but present the principles about legislation here advocated in a new light. The state should then seek to make the union which provokes quarrels follow and conform to the methods of the unions striving for peace. To employers and employes alike the state should present the one standard of law and justice and equity. The party whose acts aid in maintaining order, preserving peace and fostering good will, be they employers or employes, should have their methods chosen as the models by which to shape legislation and the basis upon which to build the public policy of commonwealths.

## PART IV.

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### Mortgage Foreclosures and Redemptions and Land Values in Minnesota in the Years 1881 and 1891.

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#### CHAPTER I.

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##### MORTGAGE FORECLOSURES ON LANDS OTHER THAN TOWN LOTS.

###### MORTGAGE INDEBTEDNESS.

No subject has attracted greater popular attention during the past few years than that of the mortgage indebtedness resting upon the farms and homes of the American people. Two quite distinct questions have arisen concerning the subject. One of them is: Has the amount of such indebtedness increased faster relatively than the population and the wealth of the country? The other is: Has the burden of mortgage indebtedness become relatively more difficult for the masses to carry? The latter question is the more important of the two. Its correct answer will furnish much valuable information concerning the real prosperity or adversity of the people. A man may double his indebtedness, or increase it a hundred fold even, but if his net income is increased and his financial standing improved, the debts are not to be greatly deplored. Rather they are to be welcomed. They show how a wise system of credits rounds to the good of all. It aids in taking the control of business out of the hands of a small class of capitalists and places it in the keeping of the progressive and energetic who start in life with but small capital in addition to their mental and moral resources.

But while an individual may increase his debts and yet add to his prosperity and thereby build success upon a broader and surer foundation, the opposite is also true. A man may reduce his debts to a large extent and yet the burden of what remains may crush him to the earth. In the commercial world money loaners never ask primarily about a man's debts, only as a knowledge of that subject may, with other information, throw some light upon the individual's ability ultimately to meet his obliga-

tions in full. One person, with debts of ten dollars, cannot borrow a cent, while another can quickly obtain credit for millions of dollars even though already greatly in debt. The great commercial agencies do not bother themselves by gathering the data of human indebtedness. Rather, they seek to obtain all possible facts about the probable solvency of the commercial class, the probability of the individuals composing it paying their debts, be they great or small. Each week we have given by those agencies the number of business failures in the United States and Canada. The details of assets and liabilities of all these failures are tabulated and given to the public. But what an assignment or other business failure is to the business man, the mortgage foreclosure is to the farmer and to some holders of city real estate. When a farm is sold under a mortgage foreclosure or judgment levy the farmer may very properly be said to have gone into bankruptcy. A slight relative increase in the frequency of such foreclosures is an indication of a change in the agricultural situation fraught with grave national consequences. A change in the opposite direction is an omen full of bright promise for the future of any state or community.

As the basis for a correct judgment upon the relative prosperity of the farmers of a state, statistics should be secured showing both the amount of indebtedness on their lands and the amount of mortgage foreclosures upon the same. When the investigation was begun, whose results are chronicled in these pages, it was supposed that before the publication of this report the United States census department would have given to the public its conclusions relating to the ownership and indebtedness of the homes and farms of Minnesota. It was the primary intention of the Bureau to print the United States census report upon this subject in connection with the results of its own investigations, thus making its figures a supplement to or check upon the accuracy of the conclusions for Minnesota given by the census report. That report had not been received when the matter for this work was arranged for the printer. This fact is mentioned to explain the special line of investigation indicated by the tables herewith presented. They do not pretend to cover but one portion of the field of mortgage indebtedness in Minnesota. They do not aim to throw any light upon the amount of present or past mortgage indebtedness in the State. They are confined to the mortgage foreclosures and redemptions therein. To those wishing more especially to know the present amount of mortgage indebtedness in Minnesota, reference must be made to the forthcoming report of the United States census department. This investigation of the Bureau of Labor Statistics, by itself, will aid in pointing out what sections of the State are more able and what ones are less able to bear the burden of their debts than ten years ago. It shows in what counties mortgage foreclosures or bankruptcies of the land owners have increased faster than the number of the people or the value of their possessions, and in what other counties the opposite change has taken place.



The data for this report have been gathered almost exclusively from the records in the offices of the several registers of deeds for the State. From those records have been obtained the number of acres sold by mortgage foreclosure, and the number redeemed after such sales, in the years 1881 and 1891. Eighteen hundred ninety one was chosen as one of the years of comparison, with a view of bringing the data down to as late a date as possible. The year 1881 was chosen to compare with the data of 1891, that there might be an even period of ten years between the twelve months for which the facts about mortgage foreclosure were gathered. Both years were selected since they were supposed to fairly represent the real industrial and financial situation among the farmers of the present and of the period of ten years ago. The facts gathered and which are presented in this report show that no two years could have been selected which would have been so illy adapted to exhibit the comparative situation relative to mortgage indebtedness in the State. Over a wide section of the commonwealth in 1881 there was an exceptional freedom from mortgage foreclosures,—a freedom which did not prevail in that section during any year preceding or succeeding that time. This fact makes that year for many counties above the normal in mortgage foreclosures of the past. In 1891 there was present, in many counties of the State, a special cause increasing largely the foreclosures above that of the preceding or succeeding year. This cause was operative in the same counties which, by special circumstances, came to exhibit a small amount of foreclosures just ten years before. The latter fact leads some very good counties to make relatively a bad showing in 1891. By reason of those circumstances the State is made to exhibit in the tables herewith presented a far less relative progress than has actually been attained,—a progress less than would have been shown by a comparison of 1880 with 1890, or of 1882 with 1892. The facts establishing this situation will be presented at length in their proper place in the subsequent pages of this report.

In addition to the facts about mortgage foreclosures and redemptions gathered from the public records of the State, the agents of the Bureau were instructed to secure all facts attainable which would throw any light upon the relative prosperity of the several counties now and ten years ago, and the causes for any changed conditions which might be found to exist. Some of the information thus obtained will be found in special exhibits, but the greater portion is embodied in the general introduction to the tables and the accompanying explanations of the financial conditions of the present and the past twenty years in Minnesota.

The general data concerning mortgage foreclosures on lands, other than town lots, and redemptions in Minnesota, are to be found in the first four tables herewith presented. Table I is a comparative statement of the foreclosures of mortgages on lands, other than town lots, in Minnesota, in the years 1881 and 1891. It gives for the State and for each county and certain

groups of counties, for the years named: (1) The number of mortgage foreclosures; (2) the amount of the debt for which the mortgages were given as security; (3) the number of acres mortgaged; (4) the amount of the decree or the sum for which the land was sold by foreclosure; and (5) the average amount per acre at which this mortgaged land was sold at its foreclosure. At the head of the table under the title "The State" are given the total sales, amounts and acres for all the property, other than town lots, sold by foreclosure in Minnesota in the given years. In group D, in this table, are gathered, separately, the acre property sold which may properly be classified under the title "city, mining and manufacturing acre property." It includes lands in the various counties which is held, not for farming purposes nor the ordinary uses of the county, but for speculative or investment purposes. There was so little of this land sold by foreclosure in 1881 that its influence or presence was but little felt in any county in the State. There were only three tracts of such land sold in Hennepin county, and none in the other counties. The average price of all lands in those counties was still that of agricultural land. It was otherwise in 1891. There was in that year a large amount of acre property sold by foreclosures which had been purchased for speculative or investment purposes. Of the land thus sold and included in group D, in table I, the land in Carlton county was a tract along the St. Louis river which had been purchased for manufacturing purposes. The acre property given in this group for Hennepin county was all located within the confines of the city of Minneapolis. The land thus given for St. Louis county is located in or near to the city of Duluth, with the exception of a share in some mineral land in the neighborhood of the iron mines. The Washington county lands given under this head are all located near the city of St. Paul. The lands of Ramsey county are, for 1891, all tabulated under group D, as there were none sold by foreclosures but those which brought the prices of speculative or city property.

In the same table, under group A, are included all acre property sold in the State in the several years, with the exception of those included in group D. In group B are added together the foreclosures for twelve counties in the State which, by special United States census bulletin No. 5, are said to have a large portion of their territory covered with timber, or are known to have within their borders much valuable mineral lands. With the exception of a few counties this group or section of the State has no great relative development of agriculture within its limits. The foreclosures in those counties are, to a very slight extent, of lands devoted to the tilling of the soil. In group C are gathered the counties not included in groups B and D. They are the counties in Minnesota which are mainly or exclusively devoted to agriculture.

Table II combines some of the facts shown in table I with data obtained from the annual reports of the state auditor. It shows, for the years 1881 and 1891, the amount of lands as-



sessed for the purposes of taxation and the number of acres sold by foreclosure proceedings, and the ratio between the same. This ratio gives the number of acres of assessed lands to every acre which was sold by foreclosure. Such ratios are given for the State as a whole, for each and every county, and for the groups already described in connection with table I.

In table III the value of the lands, other than town lots, assessed for taxation, is compared with that of the corresponding value of lands sold by mortgage foreclosure.

In table IV is presented, in a tabular form, the record of mortgage redemptions for the State in the years above mentioned. It gives the same general facts shown in table I, and the amount paid for the land at the time it was redeemed. This table also contains an exhibit of redemptions of town lots sold by foreclosure. From the summaries of table I it may be seen that in the year 1881 there were on lands, other than town and city lots and blocks, in the State, 1,169 foreclosures. In 1891 there were 1,506. The foreclosures for the earlier period were given to secure an indebtedness of \$1,030,915.56, and for the later one \$1,830,533.45. The number of acres of land covered by these foreclosures was, in 1881, 133,522.54; ten years later that number was 200,061.53. This land thus foreclosed was sold, as is shown by the amount of the decrees, for \$1,232,857.09 in 1881, and for \$2,050 311.98 in the year 1891. The average price for which this land was sold by the acre, in the earlier year, was \$9.23 and for the later \$10.24.

In 1891 there were 86 foreclosures on the city and other speculative or investment acre property, in or near the three leading cities. Those foreclosures are referred to in group D, and were on mortgages at first given to secure \$651,705.52 of debt on 3,711.27 acres. The amount of decree entered at the time of their foreclosure sales was \$675,947.44, and the average sum per acre at which this land was sold was \$182.13. Deducting these totals from the totals for the State, we have, as the totals in group A, including all lands in Minnesota with the exception of the above mentioned city and speculative acre property, the following: Mortgage foreclosures in 1881, 1,166; in 1891, 1,420. Amount of mortgages in the earlier year, \$1,021,098.64, and for the later, \$1,178,827.93. The acres sold in 1881, 133,222.54, and in 1891, 196,350.26. The amount of decrease in the first period \$1,222,480.09, and for the latter \$1,374,364.54. The average price of the land sold was, in 1881, \$9.18 and in 1891, \$7.00.

The summary given in the table for group B, the timber and mineral counties, shows that those twelve counties, in 1881, had only six foreclosures, while ten years later there were 72 within their borders. The mortgages were, in 1881, originally given to secure \$6,347.00 and for \$51,680.14 in 1891. The lands sold by foreclosure in the first year were 456.49 acres, and in the latter 11,665.42. The amount of decrees in 1881 was \$5,045.80,



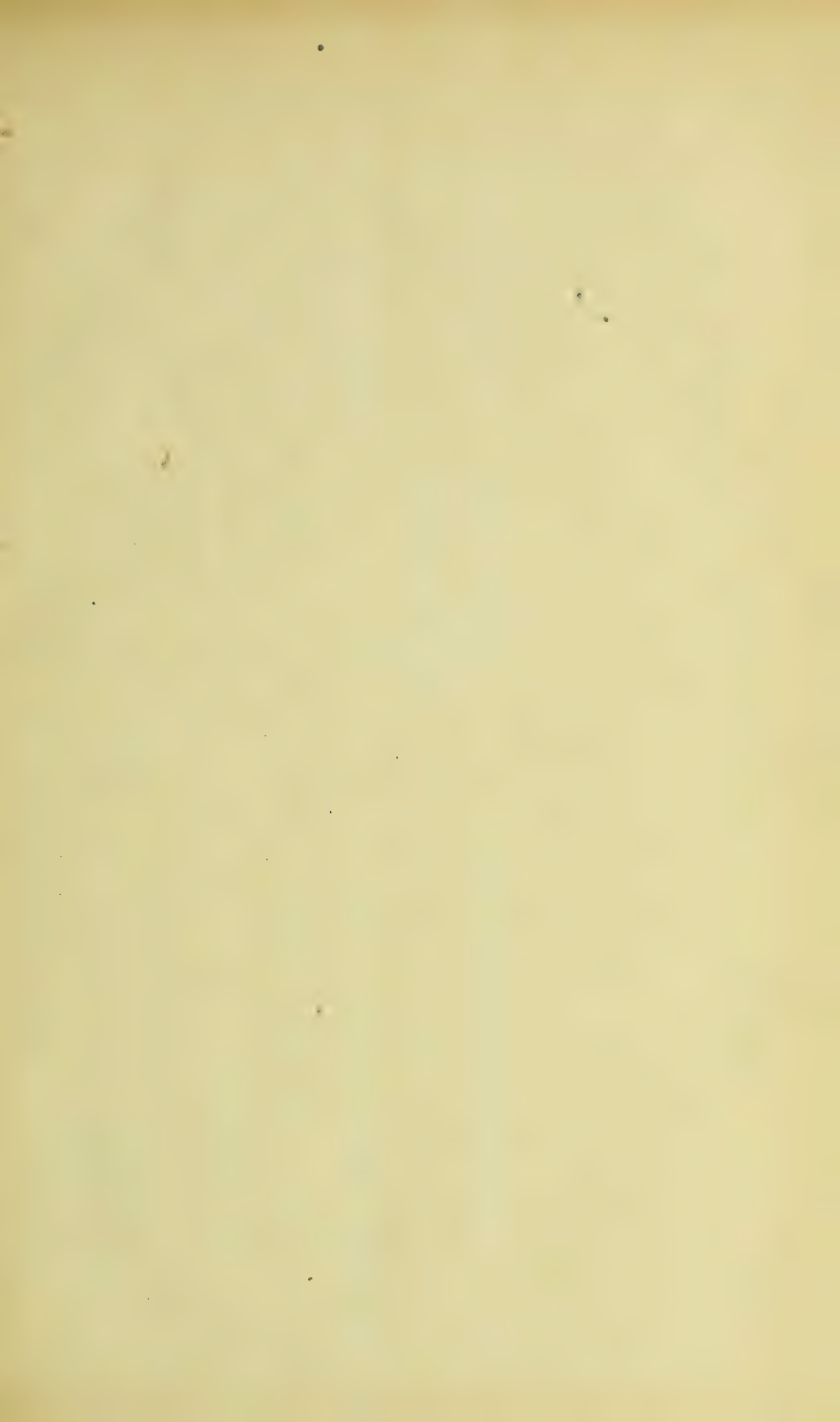
and in 1891 it was \$47,716.35. The land sold by foreclosure brought in the former year, on an average, \$11.05 an acre, and in the latter only \$4.09.

Group C, the counties devoted wholly or mainly to agriculture, presents the following comparative exhibit: In 1881 those counties had in their borders 1,160 foreclosures, and ten years later 1,348. The debts for which the mortgages were originally given as security were, in 1881, \$1,014,751.64, and in 1891 \$1,127,147.79. The acres sold by foreclosure were, in 1881, 132,766.05, and in 1891, 184,684.84. These lands at foreclosure sales brought in 1881, \$1,217,434.29, and in 1891, \$1,326,648.19. The average price at which this land was thus sold was, in 1881, \$9.17 an acre, and in 1891 only \$7.18 an acre.

It will be noticed that the average price at which the land was sold at foreclosure increased a little in the case of the whole State, but greatly decreased in groups A. B. and C. In each of those groups the average decreased from the following fact: In 1881 the lands sold by foreclosure were largely confined to the older settled counties and were the best in the State, and under the best developed and improved condition of the period. The lands sold by foreclosure in 1891 were, on the contrary, largely found in the newer counties, and included those the least improved and the poorest lands in the several counties. This is true not only of the agricultural but of the timber counties. Much of the land sold under the foreclosures in the latter, in 1891, are sections from which the timber had been quite largely removed, and hence were of but very little value. The low averages per acre for which the lands at foreclosure were sold in the agricultural and timber counties were more than balanced, however, by the high prices realized for that within or near the three principal cities of the State. The average for the State advanced from \$9.23 to \$10.24; that for the timber counties decreased from \$11.05 to \$4.09; and that of the agricultural from \$9.23 to \$7.10. The average for all the lands outside the three leading cities decreased from \$9.23 to \$6.41. The relation of these averages to the actual values of land in the State will be shown at length in Chapter II, under land values.

A comparison of the foregoing groups shows that the increase in the mortgage foreclosures for the 67 agricultural counties in ten years was \$109,213.90; that increase for the twelve counties largely covered by timber or in which the iron mines are being developed was \$42,670.55; while for the speculative city acre property it was \$665,570.44. The increase in the second group was about 40 per cent. of that of the agricultural lands, and the increase of the foreclosures on speculative or city acre property was over six times that of the lands devoted to the tilling of the soil.

These comparisons show that in many respects the burden of mortgage indebtedness rests more heavily upon the owners of speculative property than upon that devoted to any legitimate business, and that the farmer is suffering relatively the



# MORTGAGE FORECLOSURE IN MOWER - COUNTY MINN.

104	55 3 480	44 6 478.11	61 11 1380	51 2 280	49 3 320
	Udolpho	Waltham	Sargent	Pleasant-Valley	Racine
103	66 2 149	79 12 1639.75	42 6 640	53 6 560	68 11 1005
	Lansing	Red Rock	Dexter	Grand Meadow	Frankford
102	45 1 134.50	35 6 540	46 8 840	29 3 360	63 8 640
	Austin	Windom	Marshall	Clayton	Bennington
101	67 5 597	31	38 7 840	34 1 80	40 3 340
	Lyle	Nevada	Adams	Lodi	Leroy
RANGES.	18	17	16	15	14
TOTAL No. OF FORECLOSURES BY RANGES.	223	189	187	167	220
No. OF ACRES FORECLOSED.	24,278.12	23,437.49	27,285.64	20,931.	24,901.57
TOTAL No. OF FORECLOSURES BY RANGES in 1881	11	24	32	12	23
TOTAL No. OF ACRES FORECLOSED in 1881	1,360.50	2,657.86	3,700	1280	2305



The figures at the top of each township show the number of foreclosures in that township from Jan. 1<sup>st</sup> 1867 to Oct. 1<sup>st</sup> 1892. The figures in the middle show the number of foreclosures in the year 1881 and those at the bottom of the township give the number of Acres sold by Mortgage foreclosure in the year 1881.

TOWNSHIPS.







least of any calling. Legitimate business suffers in Minnesota but very little from the burden of mortgage indebtedness. The speculator is the one who has most ground for complaint at that burden. One illustration of this fact is found in the figures for the several groups in table I. Other illustrations will appear in the analysis to be given of the factors producing mortgage foreclosures in the several agricultural counties. In those counties as in the cities the speculator's lands are found relatively to have passed through the sheriff's hands much more frequently than any other class of real estate. Such property makes up the great amount of the foreclosures of Minnesota in the year 1891.

In the comparisons made above no account has been taken of the growth of cities and the additions made to the wealth of the country in the years since 1881. That growth and addition must all be considered in forming a correct idea of the relative burden of mortgages and the calamity of their foreclosures in such a rapidly developing state as Minnesota. Those factors of the problem are given their proper importance in tables II and III. The summary of table II gives the acres of land, other than town lots, assessed for taxation in Minnesota in 1881 as 18,430,789. The corresponding number in 1891 was 29,342,758. The increase of such lands in the ten years was therefore 59.2 per cent. Of this class of property there were sold by foreclosure in the State, in 1881, 133,522.54 acres, and in 1891 200,061.53 acres. The increase of these lands sold by mortgage foreclosure was only 49.8 per cent. The acreage of assessed lands increased faster than that of mortgage foreclosures, and hence the amount of such foreclosure relatively decreased. The percentage of such decrease was 6.3. In 1881 there were in the State 138.04 acres of assessed land for every acre sold by foreclosure proceedings. The relative decrease in the amount of such foreclosure increased this ratio between the amount of assessed lands in the State and those sold by foreclosures. The number which expressed that ratio was, in 1891, 141.67. The amount of assessed land outside of the three leading cities of the State (group A) increased in the ten years 58.8 per cent. and the increase in the acreage sold by foreclosure was 47.77 per cent. In 1881, for every acre of land sold by foreclosure, there were in this group 139.09 acres of assessed land; in 1891 this assessed acreage was 149.16 times greater than that of the foreclosed lands. This increase in the ratio between the two classes of land, as in the other case, marks a relative decrease in the acreage affected by foreclosure. That decrease was 7.2 per cent. The counties devoted mainly or exclusively to agriculture (group C) had, in 1881, 128.60 acres of assessed lands to every acre sold by foreclosure. In 1891 there were, in those counties, 140.72 acres of assessed lands to every acre foreclosed. This change marks a relative decrease in the acreage of land in those counties sold under foreclosure proceedings of 9.6 per cent.



The summaries for table III show that for every dollar of foreclosures in 1881, on lands other than town lots, there were in the State \$114.83 worth of assessed land of the same character. This amount of assessed property to one dollar of foreclosure had, for the whole State, decreased in 1891 to \$106.88. The relative increase in the amount of foreclosures indicated by these figures is 6 per cent. This increase was due to the great amount of foreclosures upon the acre property within the confines or territory situated near the three leading cities. The acre property, exclusive of that within or near those cities, (group A,) shows an improvement in foreclosures. Thus in that group, in 1881, for every dollar of foreclosure, there were \$115.80 of assessed land; while for the same amount of foreclosures in 1891 there were \$153.06 of assessed lands. Here is a relative decrease of 33.1 per cent. in the amount of foreclosures. The ratio of the value of assessed lands to the amount of foreclosures in the counties devoted to agriculture (group C,) was, in 1881, 111.62 and in 1891 it was 150.44. The relative decrease here shown in the amount of mortgage foreclosures is 35 per cent.

Tables II and III alike furnish evidence to the effect that mortgage foreclosures in Minnesota on the farming lands have relatively decreased in the years since 1881. The acres sold by such foreclosures have decreased 9.6 per cent. and the amount of the same has decreased 35 per cent. Which of these two percentages most fully represents or measures the decrease of foreclosures on Minnesota farming lands? In answering this question it should be noted that foreclosures are financial collapses. They are the closing up of transactions in which borrowers go down under the burden of financial pressure. The measure of such financial burden is not an acre of land, but the dollar of the market and exchange. The dollar and not the acre is, then, the correct standard by which to measure the relative decrease of foreclosures in Minnesota. Upon that standard, as a basis of comparison, is deduced the conclusion of this part of the report. *The mortgage foreclosures in Minnesota on farm property have, in the past ten years, decreased relatively 35 per cent., and the general condition of the farmers as a whole has, to that same extent, been improved since the year 1880.*

From table IV it can be seen that the mortgage redemptions on acre property included 19,636 acres in 1881 and 30,154.84 in 1891. The percentage of increase is about 53 or substantially the same as that which measured the actual increase of foreclosures on the same class of property. The increase of lots redeemed was from 116 to 411, while the number of lots sold on foreclosure proceedings increased from 874 to 8,526. The increase in the foreclosure sales of town lots was relatively 2.75 times as great as the redemptions of the same. These facts would seem to indicate that the owner of speculative real estate in the city is less able relatively to recover from bad ventures than is the farmer to rally from the crop failures and

other financial disasters which fall to his lot. The record of redemptions thus confirms the lesson drawn from the statistics of foreclosures in regard to the relative burden of mortgage indebtedness upon city and country real estate.

In addition to the four general tables for the State, already referred to at length, there is herewith presented a number of special tables giving the record of foreclosures and redemptions for the counties of Mower and Polk, from January 1, 1867, to October 1, 1892. Table V gives by townships and years, for Mower county, the same class of facts which is furnished for the State for 1881 and 1891 in table I. Table VI presents a summary of table V by townships and table VII does the same by years. In table VIII is found a further summary by years, townships and the ranges of the original government survey. Table IX presents the ratios of acres and values of foreclosed lands to the acres and values of assessed lands, other than town lots, for the various years. Tables X-XIII are arranged to give for Polk county the same class of facts which is found in tables V-IX for Mower county. Table XIV is an abstract of all the facts to be learned from the records in the office of the register of deeds of Polk county concerning the 245 tracts of land sold by foreclosure in that county in the year 1891. This table should be considered in connection with an exhibit marked A. which precedes the mortgage tables. That exhibit contains all the facts gathered from sources other than the official records concerning the owners of the lands, the abstracts of which are given in table XIV. By comparing the date of purchase and date of mortgage in table XIV it will be seen what a large number of persons mortgaged their lands about as soon as they gained title to the same. Some thus mortgaged them to raise the money to pay the government fees for pre-emption, and others to secure the purchase money. Some borrowed money as soon as they proved up on a government title, that they might have the means to improve their lands. The amount of the mortgage will, in many cases, determine the nature of the original loan. In this table XIV, in the second column, is stated the character of the deed or title received by the mortgagor. The greater portion of these were received from the United States government and were either "homesteads" or "pre-emptions," the former are marked in column by "H," the latter by "Pre-empt." When the deed was received from some other private person or firm it is marked by "W. D" or "Q. C. D" according as it was a warrantee or quit claim deed. Lands purchased from the railroad companies are marked by "R. R. D." The facts shown in tables V-IX are graphically summarized in the accompanying mortgage map of Mower county, and those in tables X-XIV are in like manner presented in the mortgage map of Polk county.



From the maps of Polk and Mower counties the reader may form a fairly correct idea of the difference between the character of the lands sold by mortgage foreclosure sales in the counties shaded on the state maps for the years 1881 and 1891. In the map for Mower county there are no shades. There is relatively but little difference between the amount of foreclosures in the several towns for the twenty-six years covered by the map and the tables. The cause which for years was operative in that county leading to foreclosures was one that affected all the towns about the same. The same condition of affairs can be noted in the distribution of the foreclosures in all the southern counties which suffered so severely from ten to twenty years ago. That cause was one then that affected good as well as poor farming land. That was characteristic of the early experience of all the counties in the State.

The map of Polk makes quite a contrast with the foregoing. The geographical distribution of its foreclosures is typical of all the agricultural counties suffering in the year 1891. The foreclosures of Polk county are largely massed in a few townships containing the poorer lands of the county. It is the same in the other counties. In the Red River valley the lands thus sold are the ones not especially adapted to wheat raising, the great staple crop of the section. The concentration of the foreclosures by towns and upon a special class of lands shows how the foreclosures of 1891 occur simultaneously with a growing prosperity of the farming section as a whole.

Table IX, for Mower county, shows the ratios of acres and values of assessed lands to those foreclosed by mortgage sales during the period of twenty-six years. In that period, on an average each year, there was one acre of land sold by foreclosure for every 88.88 acres assessed for purposes of taxation. There was also one dollar's worth of land sold in the same way for every \$78.86 worth of assessed real estate in the county. The corresponding averages for the years 1867 to 1881 were for acres 81.61 and for values \$77.64. The averages for the years 1882-1892 were for acres 105.21 and for values \$79.73. The averages for the earlier period are lower than for the latter and lower than for the twenty six years. They show that the financial condition of the county has, in recent years, greatly improved over that which prevailed in the past.

The value of the statistics for Mower county, as the basis of comparison for the whole State, depends upon the representative character of that county. If it is fairly representative of the average county of Minnesota, then its statistics may properly be made a basis of comparison for the rest of the commonwealth; otherwise not. As a check upon the same the average foreclosure for 1881 was calculated for a group of counties marked (1) in table II. That group includes all the counties of Minnesota which in 1881 returned to the assessors for taxation from 90 to 100 per cent. of the present assessed lands in their borders. They are, in other words, the counties



which in 1881 were fairly well settled. Those counties, twenty-five in number, had in 1881 one acre out of every 88.89 sold by foreclosure, and one dollar's worth thus sold out of every \$91.01 of assessed real estate. The average acreage sold in these twenty-five counties in 1881 was the same as that of Mower county for twenty six years. This fact would indicate that Mower county may be said to represent quite fairly the condition of the average Minnesota county in its varying stages of settlement. For the period prior to 1881 it may then be inferred that in Minnesota, on an average, one acre of agricultural land was sold by foreclosure for about eighty of assessed real estate. A county with less than that average to-day exhibits a better record than was the past experience of Minnesota. Judged by that standard there were, in 1881, ten counties which had above the average, and six which presented an abnormal amount of foreclosures, viz.: Dodge, Fillmore, Mower, Nobles, Olmsted and Wabasha. In the same way it is found that in 1891 there were eleven agricultural counties in the State which had more than the early average of foreclosures, and four which had an abnormal amount of such foreclosures, viz: Marshall, Norman, Polk and Sherburne.

For a long series of years, with exceptions due to particularly favorable or unfavorable crop conditions, the ratio of assessed acres to those sold by foreclosure in Mower county varied from 70 to 100, with an average of 81. That average, for the last twelve years, has been 105. On the basis of the earlier experience of Mower county, it can be said that the general condition of the agricultural counties has so improved that relatively there is but little more than one-half the mortgage foreclosures which existed in the fifteen years before 1881. The actual improvement is that indicated by the ratio between 81 and 140, or one and three-fourths. In the same way it must be decided that the average condition of the agricultural portion of the State has improved 35 per cent. above that shown by the same section in the year 1881.

The general facts about the mortgage foreclosures in Minnesota, here passed in review, are summarized and graphically presented in the two mortgage maps of the State for the years 1881 and 1891. At the top of each county are figures which show the number of acres of land in that county for every acre foreclosed in the year for which the map is constructed. The figures are from table II. At the bottom of the counties are figures giving the number of dollars' worth of assessed acre property to every dollar's worth of such property sold by foreclosure. The figures are from table III.

The maps are both shaded upon the basis of the acreage foreclosed. The darker shade includes all counties having a mortgage ratio of less than the average of Mower county for the past eleven years, one acre of foreclosure for every 105 acres of assessed real estate, other than town lots. If that average is the normal or average, then those shaded dark had a finan-

cial condition, in the year for which the map is constructed, below the average or normal. But if the normal amount of foreclosure is that included between the two averages for Mower county, those for the two periods 1867 to 1881, and 1882 to 1892, then these shades would signify something different. The dark shade would include at once the counties having an average amount and those with an excessive proportion of foreclosures. The counties shaded light are those whose average is one acre of foreclosed land to from 105 to 200 acres assessed acre property. They may all be said to be above the average or normal in freedom from mortgage foreclosure. The counties without shade are those which do not have even one acre sold by foreclosure out of a total of 200 acres on which taxes are paid. They may all be said to be exceptionally free from foreclosures.

If the shading on these maps had been made upon the basis of assessed value (as shown in table III, and not upon that of acres as shown in table II,) there would have been some changes in the same. In 1881 Rock and Redwood counties would have been shaded heavy and Watonwan and Waseca light. On the same basis there would have been quite a number of changes in the map for 1891. Hennepin, among others, would have been shaded heavy. The different grouping, when compared by the methods of tables II or III, may indicate a number of different causes. In Hennepin that different grouping by the two methods is due to the large amount of high priced speculative property included within that sold by foreclosure. This raised the total amount of the foreclosures much more relatively than it did the acreage. In some counties the difference between the two ratios is due to the large amount of the very poorest lands lost on mortgages. In others this cause is combined with another. The land is assessed relatively higher according to its worth than in most other counties. Some counties show two ratios in the two tables II and III by reason of a rate of assessment below the average for the State. Changes in the relative assessment can be traced from year to year in Mower county in table IX, and in some respects affects the general averages deduced from the experience of that county. The four tables, II, III, IX and XIV, can thus be made to throw quite a side light upon relative assessment of taxes in the several counties of the State.

The tables are of less value in this respect for the counties of Marshall, Norman and Polk than for most of the others, and for the following reason. In these three counties named many loans have, in the past ten years, been made for sums above the market value of the lands given as security. These loans have, as a rule, been made by agents either careless of or untrue to the interests of their clients, who have generally resided in the eastern states. They have made such excessive loans that the mortgagors from the first considered the lands sold and hence abandoned them. Thus of the 119 foreclosures investigated in Polk county (see exhibit A) nearly 30 per cent.



were of this character. Inquiry in the other two counties named demonstrates that about the same relative condition of affairs existed at one time within their borders. Some agents in making these loans did not directly plan to wrong their principals. They erred in their judgment concerning the value of the land offered as security. In other cases these agents entered into conspiracy with the borrower to defraud the investor. Very many of these borrowers were speculators and not farmers. They had, by nominally complying with the laws of the United States, acquired title to some land. They did not expect to farm it, but to sell and realize something from the proceeds. When land was settling up quite rapidly and hence was in great demand, these speculators were able to dispose of their claims by sale. In dull seasons, such as have prevailed in the farming regions of the northwest since the present low price of wheat has existed, cash sales of new farming land have been difficult. This was especially the case with the poorer grades of land. Men with money to buy land usually knew enough about the same to discard the poor tracts which are found in nearly every county in the Union. Hence, the only way for a speculator to realize any cash from a poor piece of land was to mortgage it to the fullest possible extent and then abandon it. This class of land owners and would be money borrowers naturally became patrons of the agents with poor judgment, or so anxious for commissions as to be untrue to the just and honorable claims of their clients, the money loaners. In the same way farmers becoming discouraged with life and labor, under new and unfamiliar conditions in an opening country, would seek loans of these agents and with like intents and results. The lands thus mortgaged, as a rule, have been foreclosed in the last few years. The prices at which they were bid in by the mortgagees were, in the majority of cases, in excess of what lands would bring at private sales. In the counties in which such loans as the foregoing described ones have been made, the ratio between the value of the assessed and foreclosed lands is less than that between the acres of such land. It is in this way that Marshall, Norman and Polk counties are made to present a worse apparent ratio in table III than in table II.

These same loan agents are answerable not only for the increased bad showing indicated by some counties in table III, but they are the cause of a large amount of other farm foreclosures here recorded. The careful and honest loan agent is ever on the lookout for that class of borrowers just described. They are careful not to buy any man's land under the form of a mortgage loan. They make loans only in such amounts as sound business principles warrant. Agents following this policy do not attract the men who wish to sell their land under the form of a loan. They have but a small relative amount of foreclosures and less still of losses. Thus one agent doing a large business in the Red River region had, in the year 1891, over 1,500 farm mortgages outstanding in that section, and in

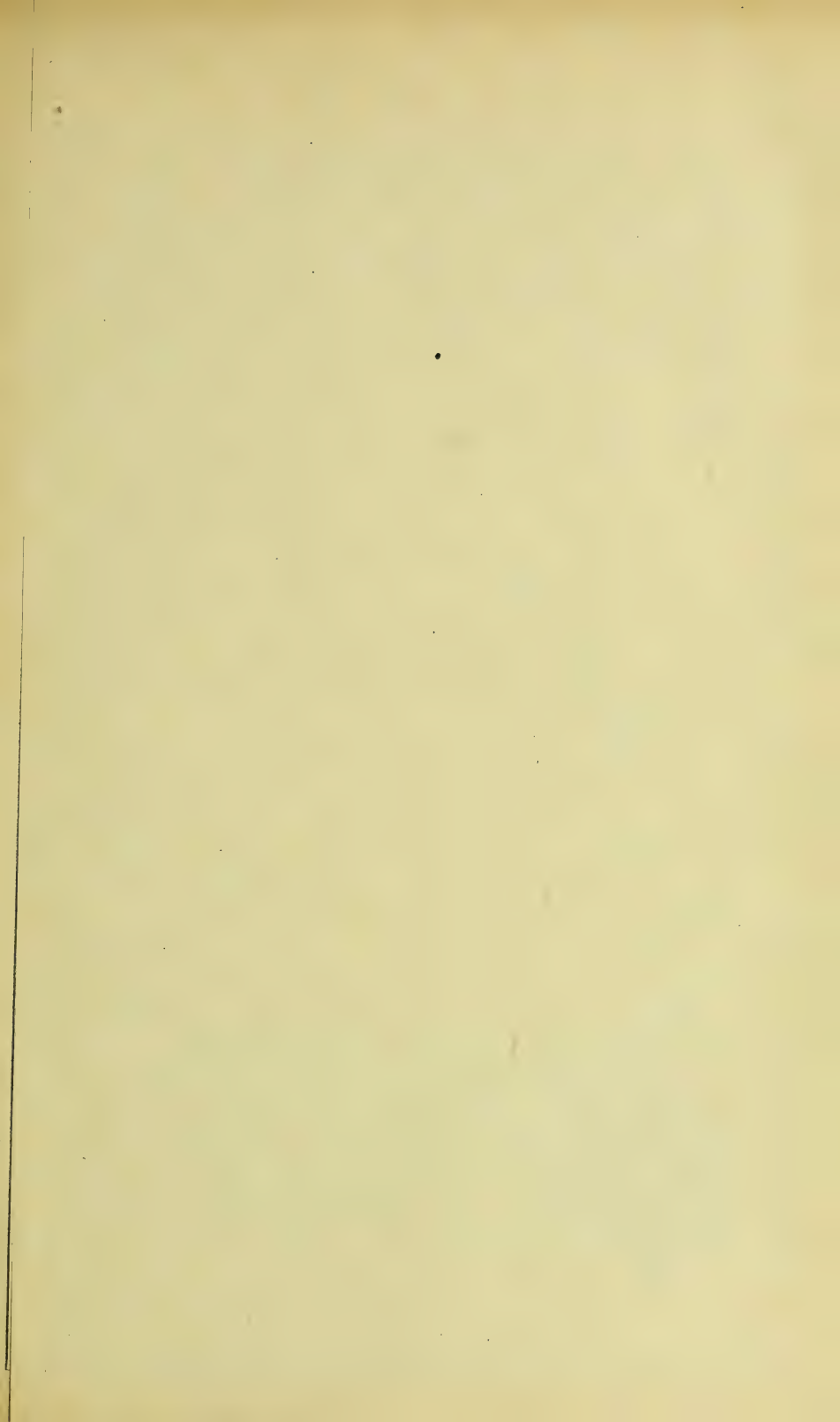


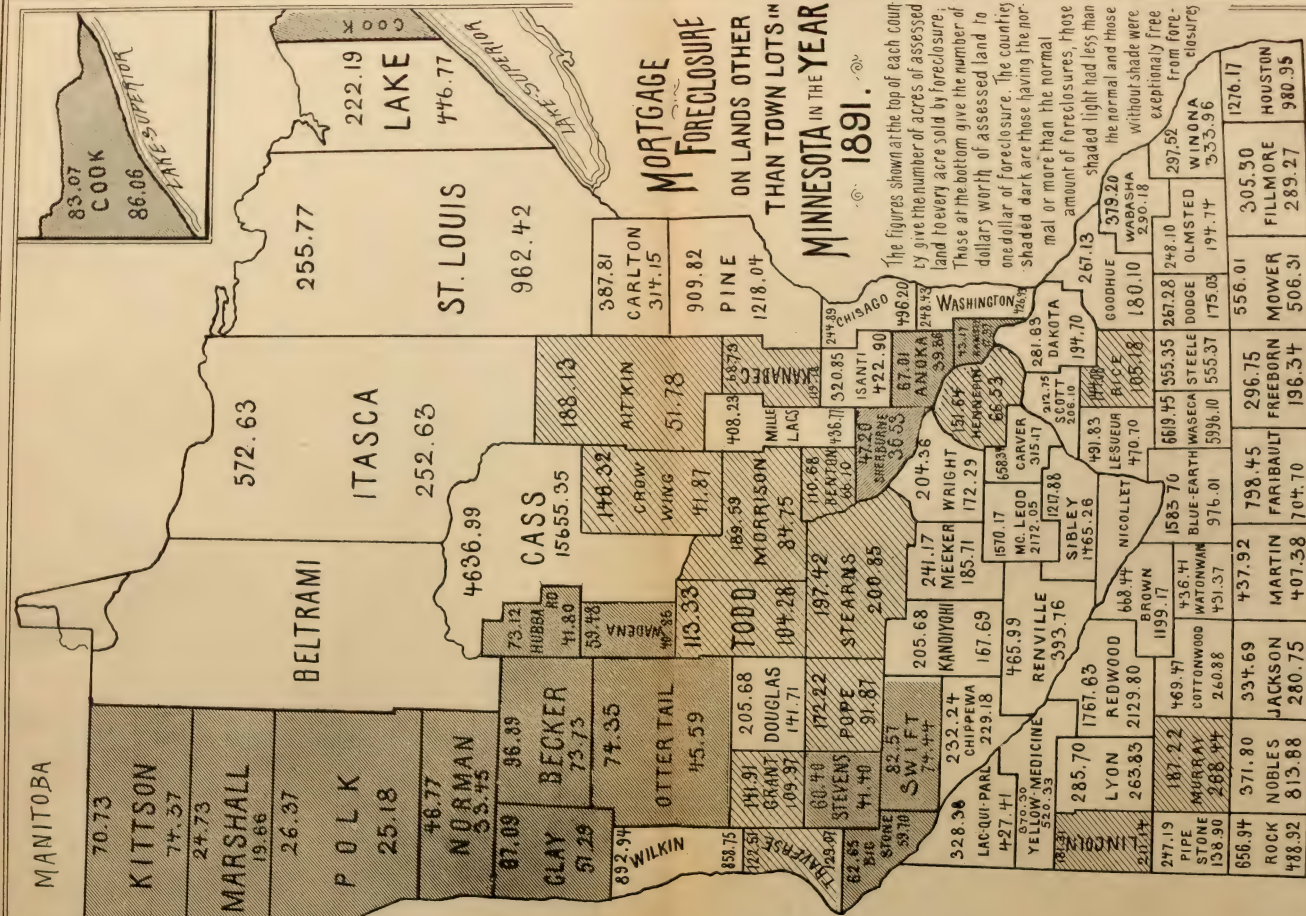
that year never foreclosed on a single instrument. But while this class of careful and honest loan agents give only limited credit to their borrowers, and thus save the borrower and lender from loss, it is quite otherwise with the class of agents first described. They urge the farmers to borrow excessive amounts of money to be expended in the purchase of farm machinery, stock and other improvements. Many farmers have in this way been led into debt, extravagant expenditures and final bankruptcy. They have lost their farms and all their possessions as the result of the excessive credit created by the undue desire of these agents to obtain commissions for the loans which they are able to negotiate.

These same agents often foreclose lands when there is no real occasion therefor. They do this, as they make the loan in the first place, for the fees which they obtain. Table XIV contains the abstract of a number of loans for \$501, or one dollar over \$500. Those loans are typical of a large number which have been given in the northwest. That extra dollar, in very many cases, is placed in the instrument by the agent in the hope that it would be foreclosed and that he would by it be enabled to obtain an extra fee. The law allows a fee of \$25 for foreclosure on a mortgage less than \$500 and \$50 on all mortgages over that amount. The agent who is avaricious is ever looking for his profit, and places loans so as to obtain a large commission in the beginning and another when the bad business venture ends as it must in failure. Thus in many other ways is the grasping loan agent answerable for a large amount of foreclosures in many parts of the State. Those agents have extorted usurious rates of interest and exorbitant commissions for placing the loans. Thus they wring money from the needy borrower. They have wronged their principals, increased the amount of foreclosures, and become a great factor in creating the bad exhibit indicated for three otherwise good counties by the mortgage statistics and map here presented for the year 1891.

In this connection it should be added that the number of these careless loan agents placing farm loans in Minnesota is very small. Over one-half of the loans made by this class of agents in the three counties of Polk, Norman and Marshall was by one man, and only three or four other agents were found who had been extremely careless of their trusts. None the less these very few agents were potent factors in swelling the mortgage foreclosure record for the three counties named. The good men who act as agents, and the farmer who wants an honest loan, alike suffer to some extent from the transient acts of these men.

It is to be regretted that the Bureau has not been able definitely to learn the causes producing the large relative amount of mortgage foreclosures in the counties of Anoka and Sherburne. Those counties are located near the two great commercial cities of the State. They both have some good agricultural lands and some poor lands. Their good farms are occupied by one of the





The figures shown at the top of each County give the number of acres of assessed land to every acre sold by foreclosure. Those at the bottom give the number of dollars worth of assessed land in a median of foreclosure. The country shaded dark are those having the normal or more than the normal amount of foreclosures, those shaded light had less than the normal and those without shade were exceptionally free from foreclosure.

County	Top Figure (Acres)	Bottom Figure (Dollars)
WINONA	33.96	197.34
OLMSTED	297.52	248.10
MARSHALL	290.18	375.20
WINN	67.13	248.10





# MANITOWBA

KITTSOON

MARSHALL

1150.79

POLK

1419.35

NORMAN

CLAY.

292.01

BECKER

227.42

329.18

OTTER-TAIL

260.37

WILKIN

CASS

HUBBARD

WADSWORTH

649.39

TODD

957.66

MORRISON

991.08

CROW

WING

343.01

BENTON

322.01

SHIERS

428.56

281.48

STEARNS

428.56

80.79

195.63

MEeker

184.94

444.11

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most progressive and successful class of agriculturists in Minnesota. These men have led in the introduction of diversified crops and are eminently successful and prosperous. A table showing the foreclosures on their lands would, without doubt, give a magnificent exhibit. The bad record presented in the tables of this report for these two counties is due to some other cause besides the farmers' lack of prosperity. Without question it is the result of some form of speculation which arises from their proximity to the two larger cities of the State. The larger number of the foreclosures from those counties which figure in this report for 1891 are the outcome of some speculative loans, and such loans are always risky wherever located. They generally lead to foreclosure and consequent loss. They represent in most instances an actual sale of lands under the name of a mortgage loan.

Farm loans are everywhere deservedly popular and reliable. Nowhere are they to be depended upon with greater surety than in Minnesota. One condition is, however, everywhere attached to that security. Loans must be placed in accordance with business methods. If loaned through an agent that agent must be a reliable, careful, capable and honest man. Loans upon farms, to be good security, must be farm loans, and not some form of wild cat ventures. Without business methods there is no security in Minnesota or anywhere else. Mention has been made of an agent in the Red River region with 1,500 farm mortgages outstanding in 1891 and not a single foreclosure among them. No agency or corporation can show a similar record in an equal number of loans upon farm property in New York or in any of the New England states. This result of good business methods in money loaning in the Red River region is duplicated in another way in southern Minnesota, where there are so very few foreclosures. Where is the county in an eastern state of the size that can pass a year as Nicollet, in 1891, without a foreclosure, or with a better record than Waseca, with only one acre thus sold in 6,619? The record of these two counties and the statistics for all parts of Minnesota, alike testify to the unrivaled security of farm mortgages in Minnesota, wherever and whenever those mortgages are placed in accordance with sound business principles.

Reference has already been made to a group of counties marked (1) in table II. That group included the counties in the State which in 1881 had at least 90 per cent. of their taxable lands reported by the assessor. In the same table is a group of counties marked (2) which in 1881 had from 66 to 90 per cent. of their land on the tax lists. Two other groups are distinguished by the figures (3) and (4.) Those marked (3) are the counties which in the year mentioned reported from 50 to 66 per cent. as much land for taxation as now, and those marked (4) had less than half the present amount of land thus reported. These four groups of counties, arranged with reference to the degree of their settlement in 1881, exhibit quite



different amounts of foreclosures in 1881 and 1891. Below is given, in a tabular form, for these groups, the number of acres of lands, other than town lots, which they contained and which were assessed for every acre that was sold by foreclosure. The same table gives the number of dollars' worth of such assessed lands to one dollars' worth sold by a mortgage sale.

	Number of acres of assessed land to one acre sold by foreclosure.		Number of dollars' worth of assessed land to one dollars' worth sold by fore- closure.	
	1881.	1891.	1881.	1891.
Group (1).....	91.01	341.73	88.89	216.17
Group (2).....	268.52	163.02	245.32	149.40
Group (3).....	213.27	154.95	190.85	113.34
Group (4).....	232.66	99.28	199.61	109.72
All agricultural lands.....	128.60	140.72	111.62	150.44

A glance at the totals for the four numbered groups shows that the counties suffering most in 1881 were those which had longest been settled. In 1891 the situation was reversed. The oldest settled group then made the best showing and the other groups dropped off in a regular series. The ratios made on the basis of value and acres in some groups varies quite a considerable, showing that the lands sold were either above or below the average in value, or they were assessed at a different ratio in the several groups, or the dishonest agent had been placing loans. The oldest settled group of counties is the only one which makes a relative improvement in its mortgage record. All the other groups have lost ground relatively in the the past ten years. And yet all groups are able to make a better showing than the older settled counties did ten years ago. In other words, they are suffering less than the older ones did when they had been settled the same length of time as the newer ones have now. This may be noted by a comparison with the record of Mower county given in table IX. Mower county but four years in the sixteen, from 1869 to 1884, made as good a record as the poorest group in those given above did in 1891.

The improvement in the financial condition thus shown in the older settled counties is undoubtedly largely due to the improved methods of agriculture which have been introduced in the last ten or fifteen years. Before that time all the farmers of Minnesota relied for their income quite largely upon wheat. Now, in this first or longest settled group of counties, improved methods of husbandry have brought with them a greater variety and rotation of crops. The amount of wheat raised in those counties is but a little over a third of what it was ten years ago. The change was made largely as the result of the excessive amount of foreclosures shown on the map for 1881 in

the counties there shaded darkest. Below is a short table showing the changes in the ratio of mortgages and relative acreage of wheat in that group of counties showing darkest in the map of 1881.

COUNTIES.	Ratio of assessed lands to lands sold on mortgage foreclosure.		Percentage of cultivated land sown to wheat.	
	1881.	1891.	1880.	1890.
Cottonwood.....	93.19	469.47	52	46
Dakota.....	70.52	281.63	68	7
Dodge.....	41.75	267.28	67	11
Fillmore.....	52.88	305.30	60	6
Freeborn.....	82.89	296.75	71	30
Goodhue.....	73.52	267.13	70	24
Houston.....	72.63	1,276.17	50	11
Kandiyohi.....	80.79	205.68	79	72
Lyon.....	94.39	285.70	71	56
Mower.....	39.21	556.01	68	5
Nobles.....	51.05	371.80	38	33
Olmsted.....	59.52	248.10	63	12
Redwood.....	104.19	1,767.63	63	59
Steele.....	89.19	355.35	75	35
Wabasha.....	55.18	379.20	66	19
Winona.....	80.73	297.52	61	17
Watonwan.....	101.86	436.41	48	39
Waseca.....	86.90	6,619.45	75	53
Total.....	65 20	358.29	66	25

The foregoing eighteen counties had only eighteen per cent., relatively, of the mortgage foreclosure in 1891, which they had in the twelve months ten years before. Their acreage of wheat had, in the same period, decreased on an average from sixty-six acres in a hundred to only twenty-five. In contrast with these counties may be presented the ratios of foreclosures and wheat arrears for the fifteen agricultural counties showing darkest on the map for 1891.

COUNTIES.	Ratio of ass'd lands to lands sold on mortgage foreclosure.		Percentage of cultivated lands sown to wheat.	
	1881.	1891.	1880.	1890.
Anoka.....	309.37	67.01	53	8
Becker.....	198.11	96.89	71	71
Big Stone.....	.....	62.65	75	73
Clay.....	342.66	67.09	78	74
Hubbard.....	.....	73.12	.....	75
Kittson.....	.....	70.73	56	.....
Marshall.....	.....	24.73	74	75
Norman.....	.....	46.77	.....	75
Otter Tail.....	329.18	74.35	76	72
Polk.....	1,150.79	26.37	80	78
Sherburne.....	438.31	47.20	55	22
Stevens.....	204.85	60.40	75	61
Swift.....	156.14	82.57	78	67
Wadena.....	127.17	59.48	75	65
Totals.....	319.95	46.72	71	63
Total, excepting Anoka and Sherburne.....	.....	.....	74	71

This last group of counties have, on an average, three times the relative acreage of wheat as the former, and relatively suffering nearly eight times as much from foreclosures. The successful introduction of a system of diversified farming into all portions of the State would doubtless accomplish much for the advancement of its agricultural interests. But the introduction of such a system is no easy matter for the northern part of Minnesota. No one there has hitherto made much of a success with any other crop than wheat. If ever a better system of agriculture is introduced into northwestern Minnesota it must be as the outcome of long and painstaking experiments with the soil under the special conditions which prevail in that particular section. Intelligent farmers will, of course, lead in all such experiments, as they did in southern Minnesota, but other countries have found it profitable for the state to assist in such experiments. A wisely directed experimental station, under the direction of the agricultural department of the State University, located in the northwest, could, in the course of years, do much to hasten, for all that part of the State, a change in the methods of agriculture such as that which has been attended with so grand results in the older counties.

Table XIII for Polk county shows that the relative amount of mortgage foreclosure in that county in 1881 was much smaller than in the preceding or succeeding year. If reference is made to the prices of wheat, given in part II of this report, it will be seen that the farmers in the preceding crop year realized a large price for the same. Not only was there a good price obtained for the wheat crop of 1880 and 1881, but those years in the Red River valley gave the cultivators of the soil bountiful harvests. The state statistician in his reports for those years gives the average yield of wheat per acre in that region at from seventeen to eighteen bushels. This very fortunate crop condition of the time is reflected in the abnormally small ratio of foreclosures reported in 1881, not only for Polk county, but for all the adjoining counties in that region. It makes the average ratio of foreclosed land included in the table just given at least fifty per cent. above what it doubtless was in the year 1880 or 1882.

Table XIII, to which reference has been made in the foregoing section, records the fact that the average ratio of foreclosure in Polk county for 1891 was greater than in any other year in its history. Inquiry shows a corresponding excess of foreclosures in that year for a large group of counties in the northwestern part of the state. The evidence collected by the Bureau all leads to the conclusion that this increase was due mainly to the agitation concerning the legal rate of interest and the usury laws by the legislature of 1891. The money loaned in that section is mainly obtained from the eastern states. The investors became scared by the agitation and would not give the customary amount of accommodation to



those defaulting on interest and other payments. The foreclosures in Polk county were nearly fifty per cent. greater than in the preceding year, and more than three times as great as in 1892.

*This fifty per cent. measures the effect for evil of this interest and usury agitation upon the average farmer in debt in Polk county in the year 1891. That effect was probably the same in most of the counties shaded dark on the mortgage map of that year. If it was the same in those other counties as in Polk, then it may be said that but for the legislative agitation about interest and usury laws, the counties of Big Stone, Clay, Hubbard, Kittson, Otter Tail, Stevens, Swift and Wadena would have presented a better exhibit in 1891 than Mower averaged for the fifteen years before 1881, or the twenty years before 1887. The same agitation in Marshall, Norman and Polk, with the excessive loans therein granted by a few careless agents, explains the bad record presented by them. A due consideration of these facts leads to this conclusion: There is not an agricultural county in Minnesota that is not in a more prosperous condition than Mower county averaged from 1867 to 1887 and no county in 1891 presented as bad an exhibit as Mower from 1880 to 1884. In this connection it should be recalled that the tables herewith presented show that Mower was in the past a fairly typical county for Minnesota, and what is said of it may properly be said of the average county of the period from 1865 to 1885. Turning back to that record of Mower it will be seen that the poorest exhibit made by a Minnesota county in 1891 merely records a condition such as all the older counties of the State experienced in the past. (This statement is made on the assumption that allowance should be made for the effect of interest agitation and special temporary causes operative in 1891.) The counties with a good record, and the agricultural counties as a whole, have, in ten years, improved their condition relatively from thirty-five to forty per cent. This is the conclusion to be derived from a study of the tables of mortgage foreclosures herewith presented. In the next chapter these conclusions will be compared with the facts learned from the record of land sales in the same years covered by these mortgage tables.*

Minnesota is a comparatively new state. Its counties, as shown in these tables, present many different ratios of mortgage foreclosures. Those counties have on preceding pages been grouped according to the degree in which their lands were occupied in 1881, into four divisions, 1, 2, 3 and 4, as shown on a preceding page. The first group, composed of the twenty-five counties which were practically settled ten years ago, had, in 1891, one acre of their farm lands sold for every 341.73 assessed for purposes of taxation. One dollar's worth of those lands was thus sold for every \$216.17 of assessed valuation of those lands. These figures represent, so far as such figures can, the relative prosperity of the farming sections of Minnesota under such conditions as exist in all the counties of the

older western states. It is worth while, then, to compare these figures with the similar ratios in one of the oldest and most prosperous agricultural counties in the west. Illinois has long been settled, and can thus fittingly be chosen for a comparison of agricultural prosperity in the older portion of Minnesota. That state, in 1887, had one acre sold by foreclosure for every 304.37 assessed for taxation, and one dollar's worth of such lands thus sold for every \$193.11 of the assessed valuation. Making the proper calculation, it is found that the older counties of Minnesota (group 1,) in 1891, presented a record of mortgage foreclosures from 11 to 12 per cent. better than the old and flourishing state of Illinois in 1887. The state of Illinois, as a whole, made a better showing in 1887 than all Minnesota in 1891. But the only fair or just comparison is that between farming sections under comparatively the same condition of agricultural development. Such a comparison is found between the whole state of Illinois and the older counties of Minnesota. The comparison is, however, not wholly just to Minnesota, since there are many factors involved which should give Illinois a better record than the North Star State. Illinois has within its borders more large towns, its counties, as a whole, have better railway facilities and cheaper railroad rates on their farm products. All this should aid in giving Illinois a better showing. Minnesota could not complain if her older counties made a poorer exhibit. In the opposite showing of a better condition by 11 or 12 per cent., there is every ground for congratulation.

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Exhibit A. Facts relating to the personal history of the owners of the land sold by mortgage foreclosure in Polk county in the year 1891.

The following facts have been secured by investigation on the part of the agents of the Bureau. Inquiry was made by them of the county and township officials and prominent men of the county. Out of 245 tracts of land foreclosed in the given year some information was secured about the personal history of the owners of 119 tracts. As will be seen from the exhibit, the information, in quite a number of cases, was rather meager and indefinite, but it is given as it was obtained for what it may be worth.

1. The facts secured may be grouped under a number of general heads. In the first of those groups will be classed the following: Twenty-five men when they mortgaged their land considered it sold. Some of them left the county within a week and one of them the same day on which the money was received on the loan. Others who were farmers remained on the land until after it was foreclosed or until they had harvested one or more crops. None of these parties ever attempted or pretended to pay any interest or make any sort of payment on their loans.

2. In addition to the foregoing twenty-five who are known to have considered their land sold from the date of their mortgage, there are a number of others, most of whom must be classed in the same list. Thus, there were five who, at the time of foreclosure in 1891, had paid no interest since 1887; three had paid none since 1888 and one since 1886. One party made a second mortgage to sell his equity in the land above a first mortgage. Altogether, including those given in this and the prior section, there were thirty-five out of the 119 foreclosures which were undoubtedly considered sold when the loan was made.

3. Two men are reported to have lost their land as the direct result of speculation. One placed a mortgage upon his farm to go into the saloon business, and one to enter upon some other line of business. These men, meeting with poor success in their new ventures, lost their farms as well as met with failure in the new undertaking. One man placed a loan upon his land to beat his creditors and failed. One loan is said to have been foreclosed by reason of the collapse of the boom in real estate which prevailed in the county some years before. These all may be said to represent some speculative venture outside of legitimate farming and make up a total of six.

4. Intemperance is ascribed as the cause of nine foreclosures. Poor management is mentioned in ten cases. Three failed because they were unable successfully to manage their land. One lost his property as the result of family troubles. One is said to have attempted to do too much on too small a capital. One became tired of farming after placing his loan, and then left the country. In this group are included a total of twenty-five which may be summed up as bad habits or incompetence, or inability to manage a farm in a new country.

5. Poor crops are reported as answerable for twenty foreclosures, poor soil for one, and bad industrial conditions for another.

6. In a group of miscellaneous causes may be mentioned the following: One man left his farm after foreclosure, and yet this is all that is said about him. One individual was swindled by the agent into paying for his land the second time—he never having taken a receipt for his first payment. Of one unfortunate it is said that he lost his land by reason of poor judgment in placing his loans. One man brought money and cattle into the county, but was unsuccessful for some unknown reason. One foreclosure was due to the neglect of the agent giving the owner proper credit for payments previously made. Four owners are reported as temperate and industrious, but unable to cope with the conditions of the new country. One man lost his place by reason of the exorbitant commission which he allowed the agent for securing the same. One man had no capital to start with, borrowing money to pay the government fees. One borrowed money to travel with, and three paid too much for threshing machines.

In addition to these 119, twenty-one out of the 245 have redeemed their lands since the foreclosure of the same.



TABLE I.

A comparative statement of the foreclosure of mortgages (on lands other than town lots) in Minnesota during the calendar years 1881 and 1891.

		1881.				1891.				
COUNTIES.	No.	Amount. of mortgages.	Acres.	Amount of decrees.	Average per acre.	No.	Amount of mortgages.	Acres.	Amount of decrees.	Average per acre.
The State.	1,169	\$1,030,945 56	133,522 54	\$1,292,857 09	\$9 23	1,505	\$1,890,533 45	200,061 53	\$2,050,311 98	\$10 24
"A" LANDS OTHER THAN CITY AND SPECULATIVE ACRE PROPERTY.										
Aitkin (a).	4	\$3,260 04	\$692 75	\$4,463 62	7 40	1	\$11,500 00	1,040 +	\$8,284 95	\$7 96
Anoka.	10	826 39	826 30	3,208 01	3 88	39	26,867 32	3,687 30	34,598 43	9 38
Becker.							11,481 13	3,130 51	16,417 66	5 24
Beltrami (a).	6	1,510 00	538 88	1,861 43	7 41	16	11,469 09	1,900	14,386 16	7 57
Benton.										
Big Stone.										
Blue Earth	32	28,102 46	3,034 04	34,147 93	11 25	30	15,833 29	4,095 57	20,384 09	4 98
Brown.	7	7,020 00	966 09	7,593 76	7 86	6	4,876 72	292 60	5,445 47	19 19
Carlton (a).	1	412 00	160	535 00	3 65	3	1,593 85	560	2,058 60	3 68
Carver.						6	3,910 00	560	3,123 93	5 58
Cass.						4	7,460 84	336 76	8,990 97	26 69
Chippewa.	3	3,075 00	880	3,288 40	3 73	1	80 65	125 65	115 00	92
Chisago (a).						9	5,285 00	1,340 22	7,039 72	5 40
Clay.	6	3,718 94	608 29	4,636 25	6 94	5	1,775 30	1,028 00	2,189 30	2 13
Cook (a).						36	32,455 32	6,138 40	40,994 79	6 68
Cottonwood.	11	5,798 90	1,731 35	9,626 64	5 56	13	4,185 00	2,080	5,443 18	2 61
Crow Wing (a).						8	4,560 00	760	6,293 04	8 28
Dakota.	30	49,229 84	5,096 78	62,998 15	12 36	12	14,517 45	1,490 73	12,765 08	8 56
Dodge.	52	50,636 80	6,590 33*	61,640 41	9 35	14	38,335 00	1,272 76*	29,946 68	23 53
Douglas.	6	1,990 98	560 36	2,161 46	3 86	10	10,832 00	1,036	15,975 71	15 42
Faribault.	18	11,154 00	2,238 69*	12,258 88	5 47	14	11,094 20	1,815 56	14,257 72	7 85
Fillmore.	93	105,867 76	10,247 20*	122,373 91	11 94	8	4,560 00	760	6,293 04	8 28
Freeborn.	40	42,822 75	4,830 64*	43,866 67	9 11	12	14,517 45	1,490 73	12,765 08	8 56
Goodhue.	60	76,625 67	6,623 42	94,889 40	14 32	14	11,094 20	1,815 56	14,257 72	7 85
Grant.	3	933 00	440	1,229 80	2 79	13	10,340 31	2,114	12,394 68	5 86
Hennepin.	14	13,430 98	777 82	10,078 70	12 96	44	174,617 79	2,082 69	158,060 15	75 89
Houston.	39	45,951 45	4,703 88*	58,349 96	12 40	3	1,368 63	277	2,215 08	7 99
Hubbard.						15	6,960 00	2,452 88	13,094 30	5 58
Isanti (a).	3	2,575 00	84 49	2,655 35	31 43	5	1,370 00	760	1,689 82	2 22
Itasca (a).						8	2,555 00	1,040	3,453 99	3 33

Jackson.....	9	\$3,170.00	717.91	\$4,080.20	\$5.68	10	\$10,778.12	1,293.22	\$7,640.54	85.91
Kanabec ( <i>a</i> ).....						4	3,400.00	1,125.96	4,108.40	3.70
Kandiyohi.....	54	21,299.08	4,269.78	26,994.60	6.32	24	12,540.00	2,188.31	16,152.74	7.38
Kittson.....						14	10,635.33	3,750.07	13,951.20	3.72
Lac qui Parle.....	5	1,354.35	637.90	1,993.62	3.03	9	3,370.39	1,360	4,781.86	3.52
Lake ( <i>a</i> ).....										
Le Sueur.....	18	12,904.92	1,461.40	14,552.42	9.96	9	2,590.00	1,363.08	3,375.44	2.48
Lincoln.....	1	400.00	100	470.86	2.99	7	5,822.85	567.70	7,021.45	12.37
Lyons.....	13	6,302.78	1,611.20*	8,065.56	5.00	12	5,886.62	1,467.50	5,825.47	3.97
McLeod.....	10	8,942.09	2,045.56	11,113.32	5.44	3	4,093.25	1,320	6,991.12	5.29
Martin.....	13	14,212.59	1,346.98	7,740.67	5.75	7	5,870.00	997.66	6,448.49	6.46
Marshall.....						69	51,203.08	13,896.60	64,634.79	4.65
Meeker.....	23	9,638.75	1,633.25	12,086.47	7.40	20	12,758.56	1,527.56	15,570.30	10.19
Mille Lacs ( <i>a</i> ).....	1	100.00	160	305.45	1.91	5	1,476.39	635.55	2,095.70	3.29
Morrison.....	3	1,150.00	340	1,395.00	4.10	22	13,729.76	2,472.05	23,434.09	9.48
Mower.....	102	99,140.47	11,303.36	122,759.35	10.86	7	7,714.75	800	7,817.70	9.77
Murray.....	7	2,346.50	869.94	3,324.69	3.82	17	5,953.40	2,102.14	7,051.90	3.35
Nicollet.....	13	7,900.00	1,426.72	10,961.59	7.68					
Nobles.....	28	11,885.25	3,448.12	15,436.73	4.47	8	1,580.43	1,120	2,509.65	2.24
Norman.....						35	39,568.31	8,892.92	49,306.41	5.54
Olmsted.....	58	86,226.80	7,010.95*	94,971.60	13.54	18	19,850.00	1,683.75	27,450.52	16.30
Otter Tail.....	14	7,851.56	1,708.45	10,403.86	6.09	103	69,669.21	13,251.02	92,520.34	6.98
Pine ( <i>a</i> ).....	1	3,260.00	52*	1,500.00	28.86	4	5,501.00	540	1,026.58	1.90
Pipestone.....						9	7,000.39	1,080	8,650.54	8.01
Polk.....	2	910.00	320	1,137.00	3.49	245	138,482.10	39,934.71	168,777.58	4.23
Pope.....	14	4,123.33	1,624.77	5,465.42	3.36	18	16,149.67	2,275.25	17,639.58	7.75
Ramsey.....	5	10,400.00	520	10,468.19	20.13					
Redwood.....	10	6,005.80	2,420.59	15,712.45	6.49	2	1,400.00	280	1,201.00	4.29
Renville.....	21	5,672.75	2,179.59	8,526.23	3.91	14	6,148.00	1,295.94	8,192.36	6.32
Rice.....	21	14,274.00	1,787.62	17,898.55	10.01	20	27,804.34	2,183.75	35,920.10	16.45
Rock.....	8	7,038.01	1,400*	8,462.40	6.04	4	3,220.00	449.48	3,755.84	8.36
St. Louis.....						31	11,890.67	4,092.19	14,785.18	3.61
Scott.....	6	7,469.55	392	8,475.44	21.62	13	8,542.21	1,030.53	10,984.54	10.66
Sherburne.....	3	1,010.00	433.92	1,385.60	3.19	33	21,607.70	4,830.30	26,607.69	5.51
Sibley.....	13	8,711.00	1,960	10,576.36	5.40	4	1,517.90	300	2,197.15	7.32

TABLE I.—Continued.

COUNTIES.	1881.				1891.					
	No.	Amount of mortgages.	Acres.	Amount of decrees.	Average per acre	No.	Amount of mortgages.	Acres.	Amount of decrees.	Average per acre
Stearns .....	20	\$6,699.53	2,390.92	\$9,761.10	\$4.08	41	\$18,659.17	4,000.08	\$22,468.44	\$5.62
Steele .....	28	23,866.58	2,979.23	28,925.11	9.71	8	7,587.55	756.37	5,294.38	7.00
Stevens .....	5	4,383.20	735.75	5,077.50	6.38	15	26,548.57	4,514.81	30,960.90	6.85
Swift .....	11	4,298.93	1,114.63	5,619.58	5.04	29	15,239.36	4,045.65	21,562.98	5.33
Todd .....	4	950.00	506	1,535.35	3.03	33	13,777.66	4,157.33	18,370.20	4.42
Traverse .....	1	300.00	160	333.15	2.08	12	5,589.00	1,814.19	7,850.76	4.33
Wabasha .....	47	62,476.94	6,031.42	65,209.76	10.78	10	9,305.00	891.50	10,683.71	11.98
Wadena .....	5	2,148.00	520	2,623.38	5.04	19	12,951.27	2,485.23	14,711.78	6.04
Waseca .....	27	18,314.00	3,032.05	23,677.87	7.78	1	350.00	40	429.60	10.74
Washington .....	15	25,398.44	2,052.54	32,818.09	15.99	11	7,611.00	976.60	9,942.72	10.18
Watowan .....	14	5,304.94	1,460.20*	7,445.89	5.09	6	3,175.00	623.50	3,936.25	6.33
Wilkin .....	...	...	...	...	...	2	1,150.00	319.85	1,564.25	4.89
Winona .....	49	36,169.20	4,845.85	48,457.29	9.99	8	9,148.42	1,325	13,310.90	10.04
Wright .....	17	5,032.54	1,045.75	6,526.83	6.24	17	17,233.94	2,014.94	21,414.67	10.59
Yellow Medicine .....	9	4,901.00	1,434.88	6,259.83	4.36	9	3,563.18	1,103.64	4,034.98	3.66
Total "A" .....	1,166	\$1,021,098.64	133,222.54	\$1,222,480.09	\$9.18	1,420	\$1,178,827.93	196,350.26	\$1,374,364.54	\$7.00
"B." LAND IN TIMBER AND MINERAL COUNTIES (marked "a" in table.)										
Total "B" .....	6	\$6,347.00	456.49	\$5,045.80	\$11.5	72	\$51,680.14	11,663.42	\$47,716.35	\$4.09
"C." LAND IN COUNTIES MAINLY DEVOTED TO AGRICULTURE (unmarked in table.)										
Total "C" .....	1,160	\$1,014,751.64	132,766.05	\$1,217,434.29	\$9.17	1,348	\$1,127,147.79	184,684.84	\$1,326,648.19	\$7.18
D. CITY MANUFACTURING AND MINING ACRE PROPERTY.										
Carlton .....	...	...	...	...	...	1	\$5,000.00	80	\$3,157.95	\$39.47
Hennepin .....	...	...	...	...	...	20	67,164.75	152.64	73,173.80	478.73
Ramsey .....	3	\$9,816.92	300	\$10,377.00	\$34.59	28	216,773.35	1,256.62	194,921.73	155.11
St. Louis .....	...	...	...	...	...	29	337,105.62	1,508.46	375,015.41	248.61
Washington .....	...	...	...	...	...	8	25,661.80	713.55	29,678.46	41.59
Total "D" .....	3	\$9,816.92	300	\$10,377.00	\$34.59	86	\$651,705.52	\$3,711.27	\$675,947.44	\$182.13

\* Includes city lots. † Includes 200 acres in Carlton Co. ‡ Includes lots and blocks and lands in Dakota Co. § Includes land in Goodhue Co.



TABLE II.

Ratio of the acres of lands, other than town lots, in Minnesota, assessed for purposes of taxation, to those sold by foreclosure of mortgage in the years 1881 and 1891.

COUNTIES.	1881.			1891.		
	Acres of assessed land.	Acres of land sold by mortgage foreclosure.	Ratio of assessed to foreclosed lands.	Acres of assessed land.	Acres of land sold by mortgage foreclosure.	Ratio of assessed to foreclosed lands.
The State.....	18,430,789	133,522.54	138.04	29,342,758	200,061.53	141.67
Aitkin (a) (4).....	56,115			195,662	1,040.00	188.13
Anoka (2).....	186,473	602.75	309.37	247,197	3,687.30	67.01
Becker (3).....	163,696	826.30	198.11	303,304	3,130.51	96.89
Beltrami (a) (4).....	32,064			160,895		
Benton (2).....	184,842	538.88	343.01	210,193	1,900.00	110.68
Big Stone (4).....	46,397			256,571	4,095.57	62.65
Blue Earth (1).....	460,291	3,034.04	151.71	463,393	292.60	1,583.70
Brown (2).....	297,656	966.09	307.48	374,326	560.00	668.44
*Carlton (a) (4).....	83,056	160.00	519.10	217,175	560.00	387.81
Carver (1).....	221,471			221,705	336.76	658.34
Cass (3).....	334,309			582,638	125.65	4,636.99
Chippewa (4).....	133,901	880.00	152.16	311,356	1,340.22	232.24
Chicago (a) (1).....	235,990			251,753	1,028.00	244.89
Clay (3).....	228,998	668.29	342.66	411,807	6,138.40	67.09
Cook (a) (4).....	13,061			172,797	2,080.00	83.07
Cottonwood (4).....	161,345	1,731.35	93.19	356,702	760.00	469.47
Crow Wing (a) (4).....	32,287			218,124	1,490.73	146.32
Dakota (1).....	359,424	5,096.78	70.52	358,444	1,272.76	281.63
Dodge (1).....	275,119	6,590.33	41.75	276,705	1,036.00	267.28
Douglas (2).....	310,011	560.36	553.24	373,427	1,815.56	205.68
Faribault (1).....	407,094	2,238.69	181.84	447,123	560.00	798.45
Fillmore (1).....	541,896	10,247.20	52.88	547,257	1,759.39	305.30
Freeborn (1).....	399,590	4,820.64	82.89	434,715	1,475.00	296.75
Goodhue (1).....	486,993	6,623.42	73.52	486,198	1,820.00	267.13
Grant (3).....	153,485	440.00	348.83	2,999.95	2,114.00	141.91
Hennepin (1)*.....	340,636	1,077.82	316.04	3,069.30	2,082.69	147.37
Houston (1).....	340,645	4,703.88	72.63	3,534.96	277.00	1,276.17
*Hubbard (4).....				1,793.62	2,452.88	73.12
Isanti (a) (2).....	214,447	84.49	2,538.13	2,438.48	760.00	320.85
Itaska (a) (4).....	130,617			595,542	1,040.00	572.63
Jackson (4).....	191,859	717.91	267.24	432,794	1,293.22	334.69
Kanabec (a) (2).....	135,708			189,987	1,125.96	168.73
Kandiyohi (2).....	344,942	4,269.78	80.79	450,097	2,188.31	205.68
Kittson (4).....	37,367			265,240	3,750.07	70.73
Lac qui Parle (4).....	182,139	637.90	285.53	446,598	1,360	328.38
Lake (a) (4).....	76,720			302,873	1,363.08	222.19
Le Sueur (1).....	276,649	1,461.40	189.44	279,116	567.50	491.83
Lincoln (4).....	42,461	160	265.38	267,710	1,476.50	181.31
Lyon (4).....	151,991	1,611.20	94.39	377,125	1,326	285.70
McLeod (1).....	288,887	2,045.56	141.23	303,828	193.50	1,570.17
Martin (3).....	225,054	1,346.98	167.08	436,861	997.60	437.92
Marshall (4).....	33,949			343,684	13,896.60	24.73
Meeker (2).....	319,508	1,633.25	195.63	368,395	1,527.56	241.17
Mille Lacs (a) (3).....	142,182	160	888.63	259,505	635.65	408.23
Morrison (2).....	325,604	340	957.66	468,677	2,472.05	189.59
Mower (1).....	443,280	11,303.36	39.21	444,926	800	556.01
Murray (4).....	121,646	869.94	139.83	393,563	2,102.14	187.22
Nicollet (1).....	266,416	1,426.72	186.73	275,036		
Nobles (4).....	176,037	3,448.12	51.05	416,420	1,120	371.80
*Norman (4).....				415,947	8,892.92	46.77

\*Not including city of Minneapolis acre property.

† Created after 1881.

\*Not including lands given under group "D."

TABLE II—Continued.

COUNTIES.	1881.			1891.		
	Acres of assessed land.	Acres of land sold by mortgage foreclosure.	Ratio of assessed to fore-closed lands.	Acres of assessed land.	Acres of land sold by mortgage foreclosure.	Ratio of assessed to fore-closed lands.
Olmsted (1).....	417,316	7,010.95	59.52	417,750	1,683.75	248.10
Otter Tail (3).....	562,387	1,708.45	329.18	985,175	13,251.02	74.35
Pine (a)(4).....	204,449	52	3,931.71	491,304	540	909.82
Pipestone (4).....	18,031	.....	266,975	1,080	247.19	.....
Polk (4).....	368,254	320	1,150.79	1,053,276	39,934.71	26.37
Pope (3).....	254,730	1,624.77	156.78	391,840	2,275.26	172.22
*Ramsey.....	80,350	520	154.52	.....	.....	.....
Redwood (3).....	252,205	2,420.59	104.19	494,937	280	1,767.63
Renville (3).....	316,299	2,179.59	145.11	603,899	1,295.94	465.99
Rice (1).....	315,543	1,787.62	176.52	314,624	2,183.75	144.08
Rock (3).....	161,984	1,400	115.70	295,280	449.48	656.94
St. Louis (4).....	297,700	.....	.....	1,046,690	4,092.19	255.77
Scott (1).....	215,636	392	550.08	219,246	1,030.53	212.75
Sherburne (2).....	190,190	433.92	438.31	228,009	4,830.30	47.20
Sibley (2).....	325,888	1,960	166.27	365,363	300	1,217.88
Stearns (2).....	672,999	2,390.92	281.48	789,722	4,000.08	197.42
Steele (1).....	265,724	2,979.23	89.19	268,775	756.37	355.35
Stevens (3).....	163,011	795.75	204.85	272,681	4,514.81	60.40
Swift (3).....	174,034	1,114.63	156.14	332,851	4,045.65	82.57
Todd (1).....	328,591	506	649.33	471,153	4,157.33	113.33
Traverse (4).....	54,770	160	342.31	222,251	1,814.19	122.51
Wabasha (1).....	333,837	6,051.42	55.16	336,061	891.50	379.20
Wadena (4).....	66,130	520	127.17	144,836	2,435.23	59.48
Waseca (1).....	263,498	3,032.05	86.90	264,778	40.	6,619.45
Washington (1).....	246,909	2,052.54	120.29	241,571	976.60	248.43
Watsonwan (3).....	148,739	1,460.20	101.86	272,246	623.50	436.41
Wilkin (3).....	162,296	.....	.....	285,608	319.85	892.94
Winona (1).....	391,236	4,845.85	80.73	394,230	1,325	297.52
Wright (1).....	383,337	1,045.75	366.57	411,773	2,014.94	204.36
Yellow Medicine (4).....	181,008	1,434.88	126.15	408,680	1,103.64	370.30
"D" City, manufac	turing and	mining acre	e property	.....	.....	.....
Minneapolis.....	.....	.....	.....	.....	72.80	.....
Ramsey county.....	.....	.....	.....	54,152	1,256.62	43.11
Carlton county.....	.....	.....	.....	.....	80	.....
St. Louis county.....	.....	.....	.....	.....	1,508.46	.....
Washington county.....	.....	.....	.....	.....	713.55	.....
*Total group "A".....	18,430,780	133,222.54	139.09	29,288,606	196,350.26	149.16
#Total group "B".....	1,556,696	456.49	297.20	3,299,465	11,663.42	232.89
Total group "C".....	17,074,084	132,766.05	128.60	25,989,141	184,684.84	140.72
Total group "D".....	.....	300.00	.....	.....	3,634.42	.....

\*Not including city of St. Paul acre property.

#Group "A" includes all acre property in the state excepting the speculative and city acre property.

||Group "B" includes all land found in the timber and mineral counties marked in table as (a.)

||Group "C" includes the counties mainly or exclusively devoted to agriculture, and is made up of those not in groups "B" and "D."

The group of counties marked (1) are those, 90 per cent. of whose present assessed land was reported in 1881 for taxation. Group (2) includes those with from 66 to 90 per cent. of land thus reported; group (3) with from 50 to 66 per cent. and group (4) with less than 50 per cent.

\$Not including lands given under group "D."

TABLE III.

The ratio of the value of lands, other than town lots, in Minnesota, assessed for purposes of taxation, to that of those sold by foreclosure of mortgage in the years 1881 and 1891.

COUNTIES.	1881.			1891.		
	Value of assessed land.	Value of land sold by mortgage foreclosure.	Ratio of assessed to fore-closed lands.	Value of assessed land.	Value of land sold by mortgage foreclosure.	Ratio of assessed to fore-closed lands.
The State .....	\$141,572,497	\$1,232,857.09	114.83	\$213,842,048	\$200,061.53	106.88
Aitkin.....	\$161,796	.....	.....	\$428,996	\$8,284.95	51.78
Anoka.....	728,200	\$4,463.62	163.14	1,379,174	34,598.43	39.86
Becker.....	729,563	3,208.01	227.42	1,210,537	16,417.66	73.73
Beltrami.....	91,494	.....	.....	475,988	.....	.....
Benton.....	599,400	1,861.43	322.01	950,860	14,386.16	66.10
Big Stone.....	226,432	.....	.....	1,216,573	20,384.09	59.70
Blue Earth.....	4,933,768	34,147.93	144.48	5,314,835	5,445.47	976.01
Brown.....	1,999,915	7,593.76	263.22	2,468,614	2,058.60	1,199.17
*Carlton.....	273,940	585.00	468.27	981,381	3,123.93	314.15
Carver.....	2,453,721	.....	.....	2,833,662	8,990.97	315.17
Cass.....	703,107	.....	.....	1,800,365	115.00	15,655.35
Chippewa.....	698,260	3,288.40	212.34	1,613,363	7,039.72	229.18
Chisago.....	1,188,371	.....	.....	1,086,336	2,189.30	496.20
Clay.....	1,353,812	4,636.25	292.01	2,102,446	40,994.79	51.29
Cook.....	19,592	.....	.....	472,805	5,443.18	86.06
Cottonwood.....	771,749	9,626.64	80.17	1,641,698	6,293.04	260.88
Crow Wing.....	107,596	.....	.....	534,398	12,765.08	41.87
Dakota.....	4,415,345	62,998.15	70.09	5,830,680	29,946.68	194.70
Dodge.....	2,968,608	61,640.41	48.16	2,796,156	15,975.71	175.63
Douglas.....	1,514,319	2,161.46	700.60	2,020,396	14,257.72	141.71
Faribault.....	3,064,072	12,258.88	249.95	3,781,546	5,366.20	704.70
Fillmore.....	5,964,634	122,373.91	48.75	5,722,963	19,784.27	289.27
Freeborn.....	3,916,876	43,895.67	89.23	3,695,755	18,823.61	196.34
Goodhue.....	6,784,853	94,889.40	71.50	6,105,270	33,731.45	180.10
Grant.....	644,842	1,229.80	524.35	1,362,968	12,394.68	109.97
*Hennepin.....	7,697,928	10,078.70	763.78	9,481,564	158,060.15	59.98
Houston.....	2,928,464	58,349.96	50.19	2,172,891	2,215.08	980.95
Hubbard.....	.....	.....	.....	572,419	13,694.30	41.80
Isanti.....	748,460	2,655.35	281.87	714,621	1,689.82	422.90
Itasca.....	254,859	.....	.....	1,815,516	3,453.99	252.63
Jackson.....	954,021	4,080.20	233.82	2,145,103	7,640.54	280.75
Kanabec.....	538,712	.....	.....	496,781	4,168.40	119.18
Kandiyohi.....	2,164,675	26,994.60	80.27	2,708,677	16,152.74	167.69
Kittson.....	119,772	.....	.....	1,037,554	13,951.20	74.37
Lac qui Parle.....	873,637	1,933.62	400.10	2,044,227	4,781.86	427.41

\*Not including lands in group "D."



TABLE III.—Continued.

COUNTIES.	1881.			1891.		
	Value of assessed land.	Value of land sold by mortgage foreclosure.	Ratio of assessed to fore-closed lands.	Value of assessed land.	Value of land sold by mortgage fore-closure.	Ratio of assessed to fore-closed lands.
Lake.....	\$120,796	.....	.....	\$1,508,078	\$3,375.44	446.77
LeSueur.....	2,452,050	\$14,552.42	168.50	3,303,282	7,021.45	470.70
Lincoln.....	207,976	479.86	433.41	1,230,020	5,825.47	211.14
Lyon.....	770,743	8,065.56	95.56	1,844,479	6,991.12	263.83
McLeod.....	2,150,086	11,113.32	193.47	3,079,401	1,417.74	2,172.05
Martin.....	1,196,616	7,740.67	154.59	2,627,003	6,448.49	407.38
Marshall.....	189,676	.....	.....	1,280,697	64,634.79	19.66
Meeker.....	2,235,293	12,086.47	184.94	2,941,531	15,570.30	185.71
Millie Lacs.....	441,056	305.45	1,443.95	915,329	2,095.70	456.77
Morrison.....	1,382,568	1,395.00	991.68	1,976,787	23,434.09	84.75
Mower.....	4,552,933	122,759.35	37.04	3,958,163	7,817.70	506.31
Murray.....	593,265	3,324.69	173.44	1,893,017	7,051.90	268.44
Nicollet.....	2,445,874	10,961.59	223.13	2,849,804	.....	.....
Nobles.....	844,985	15,430.73	54.76	2,042,564	2,509.65	513.88
Norman.....	.....	.....	.....	1,649,504	49,306.41	33.45
Olmsted.....	5,751,743	94,971.60	60.56	5,345,877	27,450.52	194.74
Otter Tail.....	2,708,844	10,403.86	260.37	4,217,942	92,520.34	45.59
Pine.....	480,365	1,500.00	320.25	1,250,412	1,026.58	1,218.04
Pipestone.....	73,057	.....	.....	1,201,560	8,650.54	138.90
Polk.....	1,613,803	1,137.00	1,419.35	4,249,018	168,777.58	25.18
Pope.....	1,080,269	5,465.42	195.83	1,620,510	17,639.58	91.87
Ramsey.....	1,955,772	10,408.19	186.83	3,306,602	194,921.73	17.47
Redwood.....	1,358,373	15,712.45	86.46	2,557,887	1,201.00	2,129.80
Renville.....	1,689,970	8,526.23	198.21	3,266,234	8,192.36	393.76
Rice.....	3,852,907	17,898.55	215.26	3,778,191	35,920.10	105.18
Rock.....	801,778	8,462.40	94.73	1,836,592	3,755.84	488.92
*St. Louis.....	761,525	.....	.....	14,329,602	14,785.18	962.42
Scott.....	2,177,605	8,475.44	256.93	2,263,935	10,984.54	206.10
Sherburne.....	563,846	1,385.60	405.49	972,224	26,607.69	36.53
Sibley.....	2,523,662	10,576.36	238.61	3,219,395	2,197.15	1,465.26
Stearns.....	4,164,713	9,761.10	426.56	4,512,761	22,468.44	200.85
Steele.....	2,773,043	28,925.11	95.87	2,940,355	5,294.38	555.37
Stevens.....	837,693	5,077.50	164.98	1,281,723	30,960.90	44.40
Swift.....	957,143	5,619.58	170.32	1,605,143	21,562.98	74.44
Todd.....	1,068,223	1,535.35	695.75	1,915,569	18,370.20	104.28
Traverse.....	239,450	333.15	718.75	1,013,306	7,850.76	129.00
Wabasha.....	3,514,448	65,269.76	53.84	3,100,194	10,683.71	299.80
Wadena.....	244,261	2,623.38	93.11	601,146	14,711.78	40.86
Waseca.....	2,697,362	23,677.87	113.92	2,576,095	429.60	5,996.10
*Washington.....	2,877,708	32,818.09	87.69	4,244,820	9,942.72	426.93
Watonswan.....	788,063	7,445.89	105.84	1,698,012	3,996.25	431.37
Wilkin.....	712,357	.....	.....	1,343,302	1,564.25	858.75
Winona.....	4,198,872	48,457.29	86.65	4,445,276	13,310.90	333.96
Wright.....	2,899,081	6,526.83	444.11	3,689,549	21,414.67	172.29
Yellow Medicine.....	841,759	6,259.83	134.47	2,099,559	4,034.93	520.33
Group "D".....	.....	\$10,377.00	.....	\$3,578,564	\$675,947.44	.....
Group "A".....	\$141,572,497	1,222,480.09	115.80	210,263,484	1,374,364.54	153.06
Group "B".....	4,427,043	5,045.80	877.37	10,670,641	47,716.35	223.63
Group "C".....	137,145,454	1,217,434.29	112.62	199,592,843	1,326,648.19	150.44

\*Not including lands in group "D."

TABLE IV.

A comparative statement of redemptions of foreclosure sales of farming lands and lots and blocks in Minnesota, for the calendar years 1881 and 1891.

COUNTIES.	1881.						1891.					
	No.	Amount of mortgages.	Amount of foreclosure sales.	Amount paid for redemption.	No. of acres.	No. of lots.	No.	Amount of mortgages.	Amount of foreclosure sales.	Amount paid for redemption.	No. of acres.	No. of lots.
The State.....	233	\$19,547.69	\$205,505.91	\$226,453.97	19,636.38	116	430	\$612,903.61	\$599,273.83	\$631,772.31	30,154.84	411
Aitkin.....												
Anoka.....												
Becker.....	2	\$642.67	\$797.84	\$860.16	160	1	6	\$7,871.46	\$12,076.33	\$31,154.40	950	
Beltrami.....												
Benton.....												
Big Stone.....												
Blue Earth.....	4	4,879.50	2,992.04	3,281.61	960		1	2,300.00	2,440.45	2,611.28	257.89	
Brown.....	1	316.60	400.00	423.50	200		3	2,205.06	1,704.80	1,878.12	479	
Carlton.....	2	243.00	770.64	852.93	177.10		3	4,100.00	4,692.62	5,172.15	240	
Cass.....	2	839.59	735.85	735.85	40	1	2	300.00	750.11	817.96	320	
Carver.....												
Cass.....	2	1,150.00	1,325.35	1,547.62	160	1	2	2,500.00	3,292.00	1,747.78	400	
Chippewa.....							3	824.50	1,179.20	1,286.09	209.35	
Clay.....							4	10,940.00	6,968.89	7,435.82	648	
Cook.....							5	1,335.00	1,892.09	2,067.63	734	
Cottonwood.....	1	440.00	435.25	483.98	150							
Crow Wing.....							3	4,482.00	3,115.69	2,106.15	80	18
Dakota.....	3	5,060.00	4,518.10	4,750.07	442		5	10,766.66	9,036.15	9,715.60	161	13
Dodge.....	7	6,300.00	7,512.36	8,080.27	668		3	6,176.00	7,819.70	8,424.20	480	
Douglas.....	3	900.00	1,317.76	1,460.89	342.65		2	1,700.00	2,337.46	2,458.68	199.50	
Faribault.....	8	1,955.40	2,973.99	3,122.39	651.96		7	4,265.00	5,137.43	5,400.40	600	1
Fillmore.....	4	2,250.00	3,228.91	3,488.27	320		3	4,600.00	5,235.60	6,192.43	425	3
Freeborn.....	5	3,000.00	4,147.43	4,514.24	640		2	2,000.00	2,726.79	2,933.18	280	
Goodhue.....	12	14,203.60	14,264.14	15,684.46	1,047.72		8	7,788.25	9,577.70	10,371.22	440	1
Grant.....							2	2,000.00	2,407.38	2,580.82	347	
Hennepin.....	34	38,569.12	41,662.55	46,103.45	68.83	80	182	302,054.00	294,264.18	324,734.90	687.74	275
Houston.....	2	680.00	1,062.14	1,223.60	120		3	1,092.00	1,357.68	1,396.07	120	3
Hubbard.....												
Isanti.....	1	300.00	270.90	290.00	120							
Itasca.....												
Jackson.....							5	3,326.00	3,496.50	3,680.36	480	3
Kanabec.....												
Kandiyohi.....	8	2,927.25	4,023.32	4,361.17	620.78		3	945.00	1,316.62	1,399.70	200	
Kittson.....							8	3,895.73	5,097.25	5,487.91	1,160	

TABLE IV.—Continued.

COUNTIES.	1881.						1891.					
	No.	Amount of mortgages.	Amount of foreclosure sales.	Amount paid for redemption.	No. of acres.	No. of lots.	No.	Amount of mortgages.	Amount of foreclosure sales.	Amount paid for redemption.	No. of acres.	No. of lots.
Lac qui Parle.....	1	451.85	652.22	673.33	160	.....	8	3,516.06	4,824.48	5,355.96	1,280	.....
Lake.....	.....	.....	.....	.....	.....	.....	1	350.00	454.21	506.62	146	.....
Le Sueur.....	4	1,752.50	1,658.15	1,791.63	80	5	1	1,200.00	1,002.59	1,102.84	.....	1
Lincoln.....	.....	.....	.....	.....	.....	.....	3	2,271.00	1,054.82	1,773.12	400	.....
Lyon.....	1	300.00	411.95	442.25	160	.....	8	1,378.00	2,104.82	2,364.46	1,100	.....
McLeod.....	7	3,501.00	4,597.64	4,844.24	1,234.70	.....	1	400.00	500.00	503.00	.....	3
Marion.....	3	1,594.06	1,878.86	2,312.51	353.99	.....	5	2,000.00	5,020.13	5,139.34	665	2
Marshall.....	.....	.....	.....	.....	.....	.....	7	4,891.00	6,881.51	6,889.51	1,120	.....
Meeker.....	14	4,807.16	6,214.68	6,823.72	1,344	6	4	1,950.00	2,526.64	2,729.30	240	.....
Miller Lacs.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morrison.....	7	5,902.50	6,153.39	6,698.70	860	.....	5	2,239.00	2,469.80	2,632.45	732	2
Mower.....	3	.....	.....	.....	.....	.....	3	4,011.50	5,000.04	6,385.18	160	1
Murray.....	.....	.....	.....	.....	.....	.....	6	1,600.25	2,129.78	2,262.86	869.05	.....
Nicollet.....	1	2,197.00	3,404.19	3,673.10	297.50	.....	1	2,500.00	3,130.85	3,381.33	160	.....
Nobles.....	2	300.00	383.70	412.92	80	.....	3	1,450.00	1,809.00	1,967.90	480	.....
Norman.....	1	740.00	1,971.04	1,171.53	160	.....	5	4,100.00	5,409.97	5,480.01	740	.....
Olmsted.....	7	8,075.00	9,497.30	10,159.77	810	1	.....	.....	.....	.....	.....	.....
Otter Tail.....	2	1,350.00	1,732.18	1,939.28	160	1	11	4,540.50	5,529.76	5,837.93	1,475.50	.....
Pine.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pipestone.....	1	239.16	119.46	176.00	.....	.....	1	2,000.00	1,311.49	1,360.30	.....	1
Polk.....	4	1,390.00	4,032.04	4,434.68	486.75	.....	1	1,975.00	2,322.82	2,508.85	320	2
Pope.....	6	1,407.50	1,911.16	1,918.62	780.58	.....	13	9,439.73	7,993.64	8,691.23	1,681.11	.....
Ramsey.....	4	27,300.00	25,022.58	27,046.67	.....	6	4	5,415.00	7,091.97	7,663.31	580	6
Redwood.....	1	250.00	377.78	408.65	160	.....	118	39,506.06	34,335.02	37,120.21	5	28
Renville.....	1	225.00	313.80	329.50	80	.....	1	205.70	250.44	265.25	80	.....
Rice.....	5	1,912.00	2,751.41	2,900.55	607.18	.....	6	1,800.00	2,461.90	2,656.30	520	.....
Rock.....	1	250.00	343.23	370.58	80	.....	10	9,650.00	11,794.76	12,740.26	772	4
St. Louis.....	2	2,367.32	2,597.00	2,778.70	.....	3	19	78,039.43	48,420.09	5,056.67	582	37
Scott.....	1	400.00	580.00	625.19	80	.....	2	750.00	871.03	8,151.09	292	.....
Sherburne.....	1	1,200.00	721.93	783.52	80	.....	3	1,422.66	1,517.45	1,439.31	160	.....
Sibley.....	2	350.00	539.15	568.82	280	.....	2	1,422.66	1,517.45	1,635.66	824	.....
Stearns.....	6	1,344.00	1,892.53	2,066.34	470	.....	1	850.00	1,046.69	1,084.92	149.01	.....
Steele.....	.....	.....	.....	.....	.....	.....	2	600.00	986.65	1,021.25	80	.....
Stevens.....	.....	.....	.....	.....	.....	.....	1	500.00	702.00	702.00	160	.....
Swift.....	3	833.75	1,049.70	1,050.02	360	.....	7	9,117.50	11,278.76	12,351.86	1,629.95	1
Todd.....	.....	.....	.....	.....	.....	.....	4	1,175.05	1,663.59	1,767.38	459	.....
Traverse.....	.....	.....	.....	.....	.....	.....	3	1,285.00	1,613.47	1,735.06	281.74	.....
Wabasha.....	6	11,367.61	6,796.19	7,405.87	505	3	1	300.00	382.80	404.50	40	.....



Wadena.....	6	5,719.82	7,368.78	8,069.81	.....	080	.....	1	300.00	436.55	462.36	160	.....
Waseca.....	6	4,231.53	4,973.10	5,459.67	.....	183.30	.....	2	1,239.00	1,584.12	1,722.06	120	.....
Washington.....	4	2,509.20	1,395.70	3,013.44	.....	484.34	.....	2	2,757.43	2,107.30	717.34	80	1
Watowan.....	4	.....	.....	.....	.....	.....	.....	1	700.00	918.07	700.00	40	.....
Wilkin.....	.....	.....	.....	.....	.....	.....	.....	1	600.00	719.90	776.85	160	.....
Winona.....	5	5,690.00	5,565.17	7,081.97	.....	326	.....	1	3,515.00	3,833.13	4,126.08	238	.....
Wright.....	3	559.00	737.75	816.16	.....	120	.....	2	7,200.00	7,406.75	7,620.57	520	.....
Yellow Medicine.....	5	1,700.00	2,306.12	2,379.54	.....	714	.....	5	2,450.00	3,162.05	3,453.34	595	2

\*Includes a foreclosure sale of 530 acres, of which but 240 acres were redeemed. †One additional mortgage of \$3,000, the amount of redemption not given.

TABLE V.

Mortgage Foreclosures and Redemptions on lands, other than Town Lots, in Mower County, Minnesota, by Townships and Years from January 1, 1867, to October 1, 1892.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
<b>LeRoy—</b>								
1872	3	\$792.25	322	\$1,443.47				
1873	1	139.82	80	214.80				
1874	1	400.00	80	550.83				
1875	3	1,700.00	320	2,120.82	1	\$1,133.33	160	\$1,150.00
1876	3	2,637.45	400	3,129.04	1	397.92	80	425.77
1877	2	2,320.00	240	2,710.25	2	1,449.45	320	1,537.75
1878					1	1,638.57	160	1,740.00
1879	9	7,530.33	1,028	11,033.26				
1880	6	6,320.80	610	8,284.97				
1881	3	2,304.16	340	3,543.38				
1882	1	1,025.00	160	1,320.86				
1883	1	1,500.00	140	2,600.00				
1884	3	3,800.00	255	8,469.36				
1887	2	2,750.00	400	3,952.96				
1889	1	415.00	80	600.27				
1891	1	640.00	80	1,800.00				
<b>Bennington—</b>								
1867	1	267.80	160	401.00				
1868	2	370.00	200	595.50	1	438.50	160	415.50
1869	1	225.00	80	325.00				
1870	2	867.85	320	986.14				
1871	2	1,500.00	40	1,774.80	1	425.00	80	459.30
1872	1	565.00	80	705.82	2	2,827.35	240	1,971.38
1873	1	400.00	160	215.38	1	1,59.73	80	147.80
1874	4	2,284.15	400	2,489.10				
1875	5	2,031.65	520	3,060.89	3	1,918.30	320	2,052.82
1876	2	1,500.00	240	1,728.54	1	274.25	80	291.44
1877	4	1,404.00	360	1,712.99	1	1,227.00	80	1,312.89
1878	5	5,547.00	600	6,845.86	3	839.49	240	903.81
1879	3	2,750.00	320	3,113.11	1	452.85	80	470.71
1880	4	5,392.00	560	6,546.90				
1881	6	3,798.50	640	4,215.36				
1882	9	9,039.65	1,240	11,178.57				
1883	5	6,700.00	1,079.50	9,850.93	1	672.11	160	729.60
1884	3	2,100.00	320	5,143.54	1	421.98	80	461.80
1885	1	1,500.00	80	1,424.66				
1887	1	2,715.00	160	2,700.00				
1889	1	150.00	40	226.33				
<b>Frankford—</b>								
1868	2	400.00	110	621.39	1	332.87	30	317.00
1869	1	400.00	160	520.33	1	288.52	80	288.52
1870	6	2,611.34	360	1,755.66				
1871	8	4,519.18	800	4,971.73	3	652.60	300	696.07
1872	5	3,070.02	440	3,901.89	1	570.50	80	616.54
1873	6	2,095.00	680	2,886.50				
1874	2	700.00	130	772.23	2	272.23	90	710.20
1875	1	448.00	73.75	586.39	1	500.00	80	534.30
1876	2	1,806.00	200	1,973.30	1	586.80	73.75	618.79
1877					1	1,347.75	160	1,453.93
1878	2	1,200.00	120	470.55				
1879	3	3,015.00	360	4,042.57	1	519.25	40	571.17
1880	6	7,611.00	750	9,484.73				
1881	11	7,379.67	1,005	8,988.30				
1882	2	2,426.19	280	3,163.28	3	2,099.58	245	2,284.61
1883	2	3,200.00	640	3,371.94				
1884	2	1,630.00	160	1,731.83				
1885	1	3,093.63	158	2,845.37				
1886	2	1,380.00	155	1,690.00				
1887	2	2,006.00	240	314.25				
1889	2	1,800.00	58	2,337.69				

TABLE V.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
<b>Racine—</b>								
1867	1	\$70.00	60	\$75.30				
1868	2	1,426.00	220	1,553.99	1	\$70.30	20	\$119.25
1869	2	2,150.00	320	2,345.00	2	1,628.90	245	1,660.75
1870	5	2,158.40	660	2,470.00				
1871	3	998.58	230	1,636.58	2	600.00	160	646.12
1872	7	3,788.85	784	4,958.69	2	1,740.00	160	1,819.40
1873	2	1,250.00	140	1,415.69				
1874	3	1,322.50	360	1,855.87	1	816.85	80	820.00
1875	1	595.00	80	748.80				
1876	2	2,800.00	280	3,105.00				
1877	1	1,200.00	80	1,500.00	1	305.00	120	319.24
1880	4	6,750.00	540	8,223.69				
1881	3	2,990.00	320	4,195.11	1	2,283.74	160	2,512.74
1882	4	6,100.00	600	7,292.48				
1883	2	1,700.00	160	1,775.80				
1884	1	795.00	53.32	299.22				
1886	2	2,690.23	240.00	4,005.10				
1888	2	2,384.00	160	2,978.86				
1890	1	930.00	80	1,474.40				
1891	1	3,363.26	160	1,200.00	1	1,474.40	80	1,609.28
<b>Lodi—</b>								
1869					2	410.00	160	505.00
1874	1	640.00	80	877.47				
1877	1	440.00	80	592.27	1	592.27	80	611.85
1880	3	2,182.25	240	2,838.11				
1881	1	575.00	80	904.10	1	655.85	80	721.43
1882	16	14,843.00	1,800	17,408.44				
1883	3	3,230.00	400	5,248.06				
1884	1	200.00	40	264.61				
1885	1	1,300.00	160	1,762.90				
1886	1	300.00	80	373.00				
1887	2	1,200.00	300	2,719.58	1	373.00	80	414.97
1889	1	200.00	60	284.08				
1890	2	1,608.76	240	4,074.00				
1891	1	1,000.00	160	1,231.59				
1892					1	1,231.59	160	
<b>Clayton—</b>								
1869	1	1,250.00	240	3,740.00				
1871	1	1,400.00	480	506.22				
1872					1	337.15	320	523.40
1877	1	970.00	80	1,276.12				
1878	2	5,520.00	760	6,361.92	1	1,276.12	80	1,365.45
1879	1	600.00	160	905.05				
1880	4	4,660.00	540	5,775.30				
1881	3	2,827.00	360	3,664.06				
1882	11	7,916.15	1,200	12,675.81				
1883	1	1,400.50	190	1,618.50	1	1,618.50	160	1,663.00
1884	1	740.00	80	800.00				
1889	1	1,650.00	190	1,200.00				
1891	2	1,211.50	160	1,563.81	1	903.06	80	951.21
<b>Grand Meadow</b>								
1869	4	805.00	480	1,510.00				
1870	1	436.00	80	569.98				
1871	3	1,250.00	400	2,049.04				
1873	3	1,300.00	402	2,060.65				
1874					2	931.50	320	1,001.93
1875	2	2,880.00	320	2,985.24				
1877	1	205.30	80	492.57	1	492.50	80	465.00
1878	3	2,948.40	320	3,755.98				
1879	4	7,776.00	480	5,119.51				
1880	6	7,553.83	780	8,025.95	1	744.25	80	817.87
1881	6	5,153.03	560	6,254.05	1	620.76	80	668.16
1882	3	3,100.00	580	4,866.78				
1883	9	7,550.00	920	9,411.61				
1884	6	9,175.00	1,800	11,761.79	1	761.96	80	823.00
1885					1	187.70	40	200.83
1886	1	822.12	40	1,010.25				
1887	1	1,690.00	160	3,454.41				



TABLE V.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
Pleasant Valley								
1867.....	4	\$2,055.00	280	\$685.00				
1869.....	5	3,350.00	560	2,344.62				
1870.....	6	3,987.00	631	4,224.23	2	\$1,729.18	320	\$1,846.92
1871.....	2	816.50	120	850.00	2	1,448.75	320	1,566.36
1872.....	2	784.46	240	917.39				
1873.....	2	2,110.00	240	2,850.00				
1874.....	1	195.30	80	410.00	1	900.00	160	971.31
1876.....	1	400.00	80	600.00				
1877.....	4	1,565.00	320	1,816.50				
1878.....	1	100.00	80	169.27	2	819.05	160	871.50
1879.....	1	1,600.00	80	300.00				
1880.....	7	14,266.00	1,158	15,871.98				
1881.....	2	2,725.00	280	3,637.97				
1883.....	6	5,598.60	560	6,279.41				
1884.....	3	3,650.00	400	4,577.85				
1885.....	3	1,501.10	240	1,924.56				
1887.....	1	1,800.00	120	2,000.00				
Adams—								
1870.....	1	680.00	160	1,000.00				
1872.....	1	200.00	160	262.77				
1873.....	2	570.06	560	1,013.85				
1874.....	1	550.00	80	822.87				
1875.....	2	719.75	200	1,019.99				
1876.....					2	\$1,017.99	200	1,092.21
1877.....	10	5,303.32	1,228.36	6,322.54	1	503.02	80	535.70
1878.....					2	1,139.20	240	1,227.12
1879.....	6	5,540.00	600	6,885.79				
1880.....	3	2,540.00	560	2,653.45	1	494.35	80	538.84
1881.....	7	5,385.00	846	7,062.89				
1882.....	3	2,800.00	400	2,948.74	1	761.87	160	815.20
1884.....	2	14,460.00	1,240	17,387.69				
1885.....					1	264.61	40	280.92
Marshall—								
1870.....	1	1,250.00	239.92	566.85				
1871.....	1	183.46	40	249.90	2	716.45	280	862.50
1872.....	1	105.00	40	169.10				
1877.....	2	1,759.66	200	1,278.12				
1879.....	2	1,225.00	120	1,705.33				
1880.....	4	4,335.00	439.50	5,315.33				
1881.....	8	6,689.15	840	7,429.80				
1882.....	7	11,235.00	1,130	14,318.95				
1883.....	11	7,010.00	800	9,649.27				
1884.....	4	2,775.00	400	3,711.43				
1885.....	4	5,150.00	480	5,108.93				
1886.....	1	1,200.00	160	1,302.00				
Dexter—								
1869.....	1	5,400.00	1,600	6,032.34				
1871.....	1	303.00	80	432.25				
1872.....	2	6,644.21	920	5,079.00	2	1,795.50	560	1,940.39
1873.....					1	1,087.45	90	1,159.50
1874.....	1	267.86	80	458.62				
1875.....	2	4,857.16	480	2,410.84	1	458.52	80	488.04
1876.....					1	897.27	160	960.26
1877.....	1	590.00	80	809.75				
1878.....	2	7,000.00	400	4,310.60				
1879.....	4	3,976.41	460	5,127.29	1	456.00	80	506.60
1880.....	4	6,863.74	640	8,308.86				
1881.....	6	7,326.40	640	5,762.84				
1882.....	5	5,975.00	800	6,745.90	1	1,094.07	160	1,182.35
1883.....	4	4,925.00	486	5,985.58				
1884.....	5	5,839.24	920	9,028.50				
1885.....	3	22,140.00	445	3,660.90				
1887.....	1	500.00	160	592.00				

TABLE V.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
<b>Sargent—</b>								
1870.....	1	\$200.00	160	\$322.30				
1871.....	1	350.00	160	343.25	1	\$322.30	160	\$348.31
1872.....	1	500.00	60	300.00				
1874.....	1	203.50	80	389.20				
1875.....	2	1,650.00	240	1,820.00				
1877.....	1	1,300.00	160	1,600.00				
1880.....	8	9,075.00	1,040	12,050.97				
1881.....	11	14,058.05	1,380	17,325.62	2	1,530.18	300	1,644.24
1882.....	10	10,873.71	1,362.86	18,284.16				
1883.....	4	1,720.00	200	2,050.52				
1884.....	5	3,530.00	720	5,289.29				
1885.....	1	1,400.00	160	1,755.58				
1886.....	2	1,700.00	240	2,470.15				
1887.....	1	850.00	160	1,020.00				
1888.....	1	1,600.00	520	850.00				
1889.....	4	4,800.00	480	7,451.38				
1890.....	6	7,600.00	800	11,258.98				
1891.....	1	700.00	160	882.30				
<b>Nevada—</b>								
1872.....	1	108.25	10	170.43				
1874.....	1	872.00	120	1,893.28				
1875.....	1	1,600.00	160	1,905.52				
1876.....	4	1,964.04	680	2,605.79				
1877.....	10	8,294.22	1,303	9,080.03	1	1,001.25	83	1,065.50
1878.....	1	600.00	15	357.80	2	996.17	140	1,063.82
1879.....	3	3,037.50	280	4,041.53				
1880.....	3	2,575.00	319	4,037.40	1	402.40	40	442.42
1882.....	1	462.00	100	650.00				
1883.....	1	5,000.00	640	6,084.51				
1884.....	1	860.00	80	1,150.00				
1885.....	3	2,885.00	320	4,358.40				
1886.....	1	1,300.00	160	2,019.30	1	955.15	80	1,026.12
<b>Windom—</b>								
1869.....	2	440.00	160	474.30				
1870.....	1	98.35	160	152.07	1	219.14	80	219.14
1871.....					1	152.07	160	164.33
1874.....	3	923.38	240	1,373.35				
1876.....	1	1,100.00	80	1,346.47				
1877.....	4	4,050.00	720	2,366.99				
1878.....	3	3,400.00	480	5,005.89	1	402.35	480	434.81
1879.....	2	1,170.00	120	1,578.00				
1880.....	4	3,275.00	320	4,115.30				
1881.....	6	7,240.00	540	9,675.91				
1882.....	3	4,180.00	496	4,874.34	1	294.48	40	327.25
1883.....	1	650.00	80	857.80				
1884.....	2	2,100.00	240	3,147.66				
1887.....	2	997.00	160	759.20				
1889.....	1	500.00	60	583.27				
<b>Red Rock—</b>								
1868.....	1	66.00	80	95.76	1	95.76	160	122.26
1869.....	2	1,300.00	320	1,311.52				
1870.....	8	4,177.45	860	3,996.27	2	1,311.57	320	1,403.35
1871.....	4	2,383.00	480	2,034.27	5	2,400.57	480	2,341.58
1872.....	3	1,800.00	360	2,074.90				
1873.....	4	4,084.00	629	3,250.40	1	899.03	160	971.54
1874.....	3	4,260.00	400	4,541.87	1	498.55	80	529.24
1875.....	1	560.00	80	743.10				
1876.....	1	3,820.00	165.70	4,064.75	1	743.10	80	803.06
1877.....	8	7,014.74	818.88	7,969.17				
1878.....	1	2,000.00	80	2,100.00	1	504.48	80	545.18
1879.....	1	1,000.00	80	1,500.00				
1880.....	3	5,800.00	480	6,912.52				
1881.....	12	15,397.79	1,639.75	20,049.16				
1882.....	4	5,000.00	480	6,194.59				
1883.....	8	25,161.00	1,510	21,981.03				
1884.....	3	1,630.87	280.80	1,751.29	1	756.60	160	924.12
1885.....	1	700.00	80	1,350.00				
1886.....	1	2,000.00	160	2,405.10				
1887.....	4	4,748.00	462.25	4,677.04				
1888.....	2	4,740.00	490	4,829.16				
1889.....	1	2,000.00	80	3,058.22				
1890.....	2	1,204.40	340	1,594.52	1	469.68	60	491.38
1891.....	1	800.00	80	1,140.00				

TABLE V.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
<b>Waltham—</b>								
1867.....	1	\$181.00	40	\$315.00	.....	.....	.....	.....
1869.....	4	3,700.00	880	3,090.79	.....	.....	.....	.....
1870.....	2	706.70	246	952.17	.....	.....	.....	.....
1871.....	1	221.00	80	329.69	1	\$413.17	80	\$447.51
1874.....	2	380.00	80	404.65	.....	.....	.....	.....
1875.....	2	1,980.00	280	2,600.15	.....	.....	.....	.....
1876.....	2	697.00	160	1,289.73	.....	.....	.....	.....
1877.....	4	4,021.00	720	4,757.14	.....	.....	.....	.....
1878.....	3	841.50	160	1,303.34	1	532.26	160	532.26
1879.....	2	3,400.00	400	3,655.00	.....	.....	.....	.....
1880.....	2	1,000.00	160	2,088.07	.....	.....	.....	.....
1881.....	6	2,458.09	478.11	5,587.86	.....	.....	.....	.....
1882.....	5	6,619.06	480	9,355.38	.....	.....	.....	.....
1883.....	1	816.00	80	685.65	.....	.....	.....	.....
1884.....	2	1,725.00	160	1,413.24	2	1,536.42	240	1,629.16
1885.....	2	750.00	240	987.70	.....	.....	.....	.....
1888.....	2	3,260.00	240	3,226.79	.....	.....	.....	.....
1889.....	.....	.....	.....	.....	1	688.61	80	734.92
1890.....	1	300.00	80	550.75	.....	.....	.....	.....
<b>Lyle—</b>								
1867.....	4	2,388.95	620	2,360.95	.....	.....	.....	.....
1868.....	1	155.00	80	242.25	.....	.....	.....	.....
1869.....	2	500.00	200	711.49	.....	.....	.....	.....
1870.....	1	48.00	160	125.85	1	165.35	160	170.00
1871.....	5	1,285.30	500	1,794.83	2	208.70	100	222.65
1872.....	1	250.00	80	325.52	1	317.35	160	341.71
1873.....	1	500.00	42.50	536.66	.....	.....	.....	.....
1874.....	3	2,032.00	280	1,891.01	.....	.....	.....	.....
1875.....	3	1,860.00	400	3,079.94	1	243.70	40	263.27
1876.....	4	4,165.00	440	3,736.50	1	346.69	80	349.69
1877.....	11	8,862.22	1,052	10,933.27	1	1,134.35	160	1,214.85
1879.....	2	1,550.00	240	2,153.43	.....	.....	.....	.....
1880.....	5	6,140.00	630	7,687.69	.....	.....	.....	.....
1881.....	5	6,063.63	597	6,823.63	.....	.....	.....	.....
1882.....	3	2,820.68	462.50	3,889.81	.....	.....	.....	.....
1883.....	4	5,793.39	480	9,062.67	.....	.....	.....	.....
1884.....	6	3,410.00	420.15	4,370.84	.....	.....	.....	.....
1885.....	1	1,000.00	160	1,154.93	.....	.....	.....	.....
1886.....	1	1,270.50	80	830.60	.....	.....	.....	.....
1887.....	1	680.00	80	817.77	.....	.....	.....	.....
1889.....	1	1,001.00	160	2,591.71	.....	.....	.....	.....
1890.....	1	1,500.00	160	1,714.69	.....	.....	.....	.....
1892.....	1	1,000.00	160	1,088.00	.....	.....	.....	.....
<b>Austin—</b>								
1867.....	2	500.00	320	1,150.70	.....	.....	.....	.....
1870.....	4	1,148.35	300	1,222.50	1	244.00	80	450.00
1871.....	4	1,365.00	240	947.81	1	373.61	20	403.76
1872.....	4	1,359.00	477.50	1,900.37	2	272.71	160	349.90
1873.....	2	859.84	155	1,199.50	2	694.29	67.50	750.30
1874.....	1	587.61	80	962.12	.....	.....	.....	.....
1875.....	1	600.00	80	568.51	1	.....	40	58.85
1876.....	4	9,158.00	560	12,080.49	.....	.....	.....	.....
1877.....	2	1,484.00	160	1,679.56	1	397.47	80	429.54
1878.....	1	1,500.00	120	1,680.10	1	268.45	80	287.24
1879.....	.....	.....	.....	.....	1	373.61	20	403.76
1880.....	1	475.00	82.82	663.40	.....	.....	.....	.....
1881.....	1	1,500.00	134.50	2,239.41	.....	.....	.....	.....
1882.....	2	3,200.00	161.37	3,737.04	.....	.....	.....	.....
1883.....	4	5,200.00	465	6,410.40	.....	.....	.....	.....
1884.....	.....	.....	.....	.....	1	1,854.58	120	1,200.00
1885.....	1	3,000.00	5	3,425.00	.....	.....	.....	.....
1886.....	3	7,696.20	141	8,793.86	.....	.....	.....	.....
1887.....	4	20,500.00	338	17,293.24	.....	.....	.....	.....
1888.....	1	3,000.00	5	3,268.40	.....	.....	.....	.....
1889.....	2	1,500.00	205	1,908.71	.....	.....	.....	.....
1890.....	1	6,000.00	1.25	7,444.95	1	1,292.56	160	1,407.20



TABLE V.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
Lansing—								
1867.....	1	\$300.00	80	\$335.50	.....	.....	.....	.....
1868.....	3	1,377.00	330	751.39	.....	.....	.....	.....
1869.....	3	2,400.00	320	1,680.63	1	\$188.13	80	\$204.35
1870.....	5	3,671.19	480	3,475.97	1	479.12	40	479.12
1871.....	6	2,420.50	341	4,008.90	1	1,131.10	80	1,221.68
1872.....	1	793.72	11	279.62	3	1,411.11	153.80	1,507.86
1873.....	5	4,950.00	480	5,321.08	.....	.....	.....	.....
1874.....	3	2,040.00	200 60	2,906.31	1	1,600.00	320	108.32
1875.....	3	1,950.91	207	616.35	1	1,120.61	1.60	1,221.68
1876.....	5	3,237.00	390	3,936.93	1	398.00	127	429.03
1877.....	6	5,271.40	663	5,884.32	.....	.....	.....	.....
1878.....	4	5,095.00	400	6,513.12	4	3,620.63	560	2,809.75
1879.....	1	1,250.00	148 20	1,403.71	.....	.....	.....	.....
1880.....	8	10,155.32	900	10,502.27	.....	.....	.....	.....
1881.....	2	850.00	149	988.40	1	743.35	80	800.88
1882.....	2	3,000.00	148 02	1,907.35	.....	.....	.....	.....
1883.....	2	1,073.00	160	1,397.99	.....	.....	.....	.....
1884.....	2	2,357.00	224	3,296.82	.....	.....	.....	.....
1885.....	3	2,400.00	140	2,869.58	.....	.....	.....	.....
1886.....	.....	.....	.....	.....	1	1,596.56	20	1,657.81
1888.....	1	1,260.00	160	1,952.82	.....	.....	.....	.....
1892.....	.....	.....	.....	.....	1	1,952.82	160	2,130.00
Udolpho—								
1867.....	1	2,550.00	40	600.00	.....	.....	.....	.....
1868.....	1	77.50	80	142.00	.....	.....	.....	.....
1869.....	3	725.00	480	1,706.50	.....	.....	.....	.....
1870.....	3	575.00	360	873.51	2	673.94	320	741.31
1871.....	5	2,044.00	680	2,474.10	1	282.66	80	305.44
1872.....	2	1,000.00	320	1,058.67	2	1,072.20	360	1,150.98
1873.....	1	650.00	240	773.10	.....	.....	.....	.....
1874.....	.....	.....	.....	.....	1	773.10	240	834.11
1876.....	7	4,881.50	760	6,418.37	.....	.....	.....	.....
1877.....	8	8,693.00	1,041.60	10,752.54	1	1,928.23	160	1,928.23
1878.....	2	1,160.00	120	1,156.58	2	2,686.92	320	2,826.36
1879.....	2	1,950.60	160	1,958.35	.....	.....	.....	.....
1880.....	6	5,220.60	880	5,936.09	1	1,176.80	160	1,199.10
1881.....	3	4,400.00	480	4,420.50	1	319.51	160	351.25
1882.....	3	1,940.10	400	3,650.87	1	844.21	80	878.00
1883.....	2	2,400.00	320	3,039.61	1	297.03	160	220.00
1884.....	1	460.00	80	635.69	1	1,930.63	160	2,037.68
1885.....	2	2,350.00	240	2,950.63	.....	.....	.....	.....
1889.....	1	1,600.00	160	1,928.30	.....	.....	.....	.....
1890.....	.....	.....	.....	.....	1	1,928.30	160	2,096.91

TABLE VI.

Mortgage foreclosures and redemptions on lands, other than town lots, in Mower county, by townships, from January 1, 1867, to October 31, 1892.

TOWNSHIPS AND RANGES.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of mortgages	Number of acres.	Amount of re- demptions
Range 14.—								
LeRoy.....	40	\$34,324.81	4,345	\$51,774.27	5	\$4,619.27	720	\$4,853.52
Bennington...	63	51,047.60	7,959.50	65,249.42	16	9,636.56	1,600	9,219.05
Frankford.....	68	50,779.03	6,879.75	53,258.02	15	7,170.19	1,178.75	8,091.13
Racine.....	49	45,461.82	5,527.32	53,109.49	11	8,919.19	1,025	9,506.78
Range 15.—								
Lodi.....	34	27,720.01	3,720	38,578.21	6	3,262.71	560	2,253.25
Clayton.....	29	30,145.15	4,440	40,086.79	4	4,134.83	640	4,503.15
Grand Mead'w	53	52,704.68	7,402	63,377.81	7	3,738.67	380	3,976.79
Pleasant Val'y	51	46,503.96	5,360	49,457.78	7	4,806.98	960	5,256.09
Range 16.—								
Adams.....	38	38,678.07	6,028.36	47,380.58	8	4,181.04	800	4,489.99
Marshall.....	46	42,917.27	3,989.42	50,865.01	2	716.45	280	862.50
Dexter.....	42	82,614.02	3,185	64,754.27	7	5,788.81	1,130	6,237.14
Sargent.....	61	62,119.26	8,082.65	85,463.80	3	1,852.48	466	1,992.55
Range 17.—								
Nevada.....	31	29,558.01	4,187	38,353.99	5	3,354.97	343	3,597.86
Windom.....	35	30,123.73	3,856	36,310.55	4	1,068.04	760	1,145.53
Red Rock.....	79	100,947.25	10,436.38	109,622.64	14	7,679.34	1,580	8,131.71
Waltham.....	44	33,084.35	4,958.11	42,593.10	5	3,170.46	560	3,343.85
Range 18.—								
Lyle.....	67	54,295.67	7,484.15	67,924.04	6	2,416.14	740	2,562.17
Austin.....	45	70,633.00	4,031.44	78,556.07	12	5,771.28	827.50	5,789.55
Lansing.....	66	55,852.04	5,920.93	60,029.06	16	14,241.43	1,629.40	12,569.48
Udolpho.....	55	42,681.70	6,841.60	50,475.41	15	13,913.53	2,360	14,569.37
Total.....	996	\$982,191.43	120,833.82	\$1,153,220.31	167	\$110,532.27	18,786.65	\$112,942.46

TABLE VII.

Mortgage foreclosures and redemptions on lands, other than town lots, in Mower County, by years, from January 1, 1867, to October 31, 1892.

FORECLOSURES.				REDEMPTIONS.			
YEARS.	No.	Amount of mortgages	Number of acres.	No.	Amount of decrees.	Number of acres.	Amount of re- demptions
1867.....	15	\$8,312.75	1,600	...	...	...	...
1868.....	12	3,871.50	1,100	4	\$937.43	370	\$974.01
1869.....	31	22,675.00	5,800	6	2,515.55	565	2,658.62
1870.....	49	22,555.63	5,170.92	10	4,822.30	1,320	5,309.84
1871.....	47	21,044.52	5,031	23	9,126.98	2,300	9,685.61
1872.....	35	21,760.76	4,295.61	16	10,343.87	2,193.80	10,261.65
1873.....	30	18,838.66	3,808.50	5	2,820.50	397.50	3,029.14
1874.....	31	17,658.30	2,770.60	9	5,792.23	1,290	4,975.11
1875.....	29	23,432.47	3,440.75	9	5,374.46	721.60	5,767.96
1876.....	38	38,159.99	4,435.70	9	4,662.11	880.75	4,372.25
1877.....	81	64,811.86	9,386.84	12	10,378.29	1,433	10,874.48
1878.....	30	36,911.90	3,655	21	14,723.69	2,700	14,674.30
1879.....	46	47,370.24	5,036.20	4	1,801.71	220	1,952.24
1880.....	91	112,191.54	11,629.32	4	2,817.80	360	2,998.23
1881.....	102	99,140.47	11,303.36	7	6,153.39	860	6,698.70
1882.....	94	102,555.54	12,280.75	7	5,094.21	685	5,487.41
1883.....	71	90,627.49	9,304.50	3	2,587.64	480	2,612.60
1884.....	53	61,287.11	7,873.27	5	7,262.17	840	7,075.76
1885.....	27	49,169.73	2,908	2	452.31	80	481.75
1886.....	15	20,359.05	1,456	2	2,551.71	100	2,683.93
1887.....	22	39,739.00	2,740.25	1	373.00	80	414.97
1888.....	9	16,244.00	1,575	...	...	...	...
1889.....	16	15,616.00	1,573	1	688.61	80	734.92
1890.....	14	19,143.16	1,701.25	3	3,690.54	380	3,995.49
1891.....	7	7,714.76	800	2	2,377.46	160	2,560.49
1892.....	1	1,000.00	160	2	3,184.41	320	2,130.00
Totals.....	996	\$982,191.43	120,833.82	167	\$110,532.27	18,786.65	\$112,942.46

TABLE VIII.

The mortgage foreclosures of Mower County, Minnesota, from January 1, 1867, to October 1, 1892. The number of foreclosures and of the acres of land sold are given by years, townships and ranges.

TOWNSHIPS AND RANGES.	1867.		1868.		1869.		1870.		1871.		1872.		1873.		1874.		1875.	
	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.
Range 14—																		
Leroy.....	101																3	320
Bennington.....	102	200	2	160	1	80	2	320	2	400	3	322	1	80	1	80	5	320
Frankford.....	103	2	110	160	1	160	6	360	8	800	1	1	1	160	4	400	5	520
Racine.....	104	220	2	60	2	320	5	660	3	230	5	440	6	680	2	130	1	73.75
Totals for range.....																	1	80
Range 15—																		
Lodi.....	101	220	6	530	4	560	13	1,340	13	1,430	16	1,626	10	1,060	10	970	10	993.75
Clayton.....	104														1	80		
Grand Meadow.....	103																	
Pleasant Valley.....	104	4	280		5	560	6	631	2	120	2	240	2	240	1	80	2	320
Totals for range.....																		
Range 16—																		
Adams.....	101	280			10	1,280	7	711	6	1,000	2	240	5	642	2	160	2	320
Marshall.....	102																	
Dexter.....	103				1	1,600	1	160	1	40	1	160	2	560	1	80	2	200
Sargent.....	104																	
Totals for range.....																		
Range 17—																		
Nevada.....	101				1	1,600	3	559.92	3	280	5	1,180	2	560	3	240	6	920
Windom.....	102																	
Red Rock.....	103				2	160	1	160			1	10			1	120	1	160
Waltham.....	104	1	40	1	80	2	320	8	480	3	360	4	629	3	240	3	400	80
Totals for range.....																	2	280
Range 18—																		
Lyle.....	101	40	1	80	8	1,360	11	1,260	5	560	4	370	4	639	9	840	4	526
Austin.....	102	620	1	80	2	200	1	160	5	500	1	80	1	42.50	3	280	3	400
Lansing.....	103	320			4	320	4	300	4	240	4	477.50	2	155	1	80	1	80
Udolpho.....	104	80	3	330	3	320	5	480	6	341	1	.11	5	480	3	200.60	3	207
Totals for range.....																		
Mower County.....	15	1,600	12	1,100	31	5,800	49	5,170.92	47	5,031	35	4,293.61	30	3,808.50	31	2,770.60	29	3,440.75



TABLE VIII.—Continued.

TOWNSHIPS AND RANGES.	1876.		1877.		1878.		1879.		1880.		1881.		1882.		1883.		1884.	
	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.
Range 14—																		
Leroy .....	3	400	2	240	9	1,028	6	610	6	610	3	340	1	160	1	140	3	255
Bennington .....	2	240	4	360	3	320	4	560	4	560	6	610	9	1,240	5	1,079.50	3	320
Frankford .....	2	240	3	360	3	360	6	750	4	750	11	1,005	2	280	2	640	1	160
Racine .....	2	280	1	80	2	.....	6	540	4	540	3	320	4	600	2	160	1	53.32
Totals for range .....	9	1,120	7	680	15	1,708	20	2,460	23	2,460	23	2,305	16	2,280	10	2,019.50	9	788.32
Range 15—																		
Lodi .....	1	80	1	80	.....	.....	3	240	1	240	1	80	16	1,800	3	400	1	40
Clayton .....	1	80	1	80	.....	.....	4	540	3	540	3	360	11	1,200	1	190	1	80
Grand Meadow .....	1	80	1	320	3	480	6	780	6	780	6	560	3	580	6	920	6	1,800
Pleasant Valley .....	1	80	1	80	1	80	7	1,158	2	1,158	2	280	.....	.....	9	560	3	400
Totals for range .....	1	80	7	560	6	720	20	2,718	12	2,718	12	1,280	30	3,580	19	2,070	11	2,320
Range 16—																		
Adams .....	10	1,228.36	2	240	6	600	3	560	7	840	7	840	3	400	.....	.....	2	1,240
Marshall .....	2	240	2	240	2	120	4	439.50	8	840	8	840	7	1,130	11	800	4	400
Dexter .....	1	80	1	80	4	460	4	640	6	640	6	640	5	800	4	480	5	920
Sargent .....	1	160	1	160	.....	.....	8	1,040	11	1,380	11	1,380	10	1,362.86	4	200	5	720
Totals for range .....	14	1,668.36	14	1,668.36	12	1,180	19	2,679.50	32	3,700	32	3,700	25	3,692.86	19	1,480	16	3,380
Range 17—																		
Nevada .....	4	680	10	1,303	1	15	3	319	3	319	.....	.....	1	100	1	640	1	80
Windom .....	1	80	4	720	3	480	2	320	4	320	6	540	3	406	1	320	2	240
Red Rock .....	1	165.70	8	818.88	1	80	3	480	12	1,639.75	12	1,639.75	4	480	8	1,510	3	280.80
Waltham .....	2	160	4	720	3	160	2	160	6	478.11	6	478.11	5	480	1	80	2	160
Totals for range .....	8	1,085.70	26	3,561.88	8	735	12	1,279	24	2,657.86	13	1,556	11	1,556	11	2,310	8	760.80
Range 18—																		
Lyle .....	4	440	11	1,052	.....	.....	5	630	5	597	3	462.50	4	480	4	480	6	420.15
Austin .....	1	560	2	160	1	120	1	82.82	1	134.50	2	161.37	2	161.37	1	465	.....	.....
Lansing .....	5	380	6	663	4	400	8	900	2	149	2	149	2	148.02	2	160	2	224
Udolpho .....	7	760	8	1,041.60	2	120	6	880	3	480	3	480	3	400	2	320	1	80
Totals for range .....	20	2,150	27	2,916.60	7	640	20	2,492.82	11	1,360.50	10	1,360.50	10	1,171.89	12	1,425	9	724.15
Mower County .....	38	4,435.70	81	9,386.84	30	3,655	91	11,629.32	102	11,303.36	94	12,280.75	71	9,304.50	53	7,873.27		

TABLE VIII.—Continued.

TOWNSHIPS AND RANGES.	1885.		1886.		1887.		1888.		1889.		1890.		1891.		1892.		Totals.	
	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.
Range 14—																		
Leroy.....	101	400	2	400	2	400	1	80	1	80	1	80	1	80	1	80	4,535	7,933.50
Bennington.....	102	160	1	160	1	160	1	40	1	40	1	40	1	40	1	40	683	6,879.75
Frankford.....	103	240	2	240	2	240	2	58	2	58	1	80	1	160	1	160	49	5,527.32
Racine.....	104	240	2	240	2	240	2	160	2	160	1	80	1	160	1	160	220	34,901.57
Totals for range.....	2	238	4	395	5	800	2	160	4	178	1	80	2	240	2	240	34	3,720
Range 15—																		
Lodi.....	101	160	1	80	2	300	1	60	1	60	2	240	1	160	2	160	29	4,440
Clayton.....	102	160	1	160	1	160	1	190	1	190	2	160	2	160	2	160	53	7,402
Grand Meadow.....	103	240	1	40	1	160	1	120	1	120	1	160	1	160	1	160	51	5,369
Pleasant Valley.....	104	240	1	120	1	120	1	120	1	120	1	160	1	160	1	160	167	20,931
Totals for range.....	4	400	2	120	4	580	2	250	2	250	2	240	3	320	2	240	38	6,028.36
Range 16—																		
Adams.....	101	480	1	160	1	160	1	160	1	160	1	160	1	160	1	160	46	3,989.42
Marshall.....	102	445	1	160	1	160	1	160	1	160	1	160	1	160	1	160	42	8,185
Dexter.....	103	160	2	240	1	160	1	520	4	480	6	800	1	160	1	160	61	8,082.86
Sargent.....	104	160	1	160	1	160	1	520	4	480	6	800	1	160	1	160	17	27,285.64
Totals for range.....	8	1,085	3	400	2	320	1	520	4	480	6	800	1	160	1	160	31	4,187
Range 17—																		
Nevada.....	101	320	1	160	2	160	2	160	1	160	2	340	1	160	1	160	35	3,856
Windom.....	102	80	1	160	4	462.25	2	490	1	80	2	340	1	160	1	160	79	10,438.38
Red Rock.....	103	240	1	160	1	160	2	240	1	160	1	80	1	160	1	160	44	4,989.11
Walsham.....	104	240	1	160	1	160	2	240	1	160	1	80	1	160	1	160	189	23,437.49
Totals for range.....	6	640	2	320	6	622.25	4	730	2	140	3	420	1	160	1	160	67	7,484.15
Range 18—																		
Lyle.....	101	160	1	80	1	80	1	160	1	160	1	160	1	160	1	160	45	4,031.44
Austin.....	102	5	3	141	4	338	1	5	2	205	1	1.25	1	1.25	1	1.25	66	5,920.93
Lansing.....	103	140	1	160	1	160	1	160	1	160	1	160	1	160	1	160	55	6,841.60
L'Ange.....	104	240	1	160	1	160	1	160	1	160	1	160	1	160	1	160	233	24,278.12
Totals for range.....	7	545	4	221	5	418	2	165	4	525	2	161.25	1	160	1	160	996	120,833.82
Mower County.....	27	2,908	15	1,456	22	2,740.25	9	1,575	16	1,573	14	1,701.25	7	800	1	100	996	120,833.82

TABLE IX.

Ratios of the acres and values of land, other than town lots, in Mower county, Minnesota, assessed for purposes of taxation, to those sold by mortgage foreclosures, from January 1, 1867, to October 1, 1892.

YEARS.	COMPARISONS BY ACRES.			COMPARISONS BY VALUES.		
	Acres of assessed land.	Acres of land sold by foreclosure.	Ratios of assessed lands to those foreclosed.	Value of assessed lands.	Amount of foreclosure sales.	Ratios of assessed values to amounts of sales.
1867... ..	399,638	1,600	249.77	\$1,011,417	\$5,923.45	170.57
1868.....	384,631	1,100	349.66	1,428,765	4,002.19	356.74
1869.....	394,371	5,800	67.96	1,459,200	25,792.52	52.69
1870.....	429,555	5,170.92	83.05	1,968,732	22,692.50	86.75
1871.....	417,509	5,031	82.98	2,023,883	24,403.37	82.93
1872.....	419,592	4,293.61	97.70	1,970,068	23,547.67	83.66
1873.....	424,022	3,808.50	111.33	1,989,729	21,746.70	90.15
1874.....	434,421	2,770.60	156.79	3,966,557	22,508.78	166.67
1875.....	436,909	3,440.75	126.98	4,001,773	24,266.54	164.91
1876.....	441,892	4,435.70	99.60	4,723,051	46,014.91	102.64
1877.....	441,892	9,386.84	47.07	4,779,204	73,514.13	65.01
1878.....	443,727	3,655	121.40	5,541,025	40,031.01	138.44
1879.....	443,727	5,036.20	88.11	5,542,509	54,511.93	101.67
1880.....	448,296	11,629.32	38.53	4,638,234	135,322.98	34.24
1881.....	443,280	11,303.36	39.21	4,552,933	122,759.35	37.25
1882.....	448,755	12,280.75	36.54	4,161,050	134,463.35	30.90
1883.....	439,794	9,304.50	47.25	4,122,236	107,430.28	38.66
1884.....	441,983	7,873.27	56.14	4,024,389	84,292.65	47.75
1885.....	441,979	2,708	151.61	4,068,409	35,588.14	114.32
1886.....	445,214	1,456	305.77	4,106,931	24,899.36	164.94
1887... ..	441,224	2,740.25	161.01	4,064,923	43,126.45	94.25
1888.....	442,216	1,575	280.77	3,915,368	17,106.03	228.88
1889.....	445,412	1,573	283.16	3,957,155	22,169.96	178.94
1890.....	445,365	1,701.25	261.84	3,966,788	28,110.29	141.18
1891.....	444,926	800	556.15	3,958,163	7,817.70	506.31
1892.....	.....	160	2,780.75	.....	1,088.00	3,628.73
Total....	.....	120,833.82	88.88	.....	\$1,153,220.21	78.86



TABLE X.

Mortgage foreclosures and redemptions on lands, other than town lots, in Polk County, Minnesota, from the organization of the county to October 1, 1892, by townships and years.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
Columbia .....								
Queen—								
1892.....	1	\$300.00	147.40	\$462.74				
Eden.....								
Rosebud—								
1890.....	2	660.00	80	983.96				
1891.....	1	800.00	160	977.77				
1892.....	1	650.00	160	920.08				
Brandsvold—								
1886.....	1	110.00	160	179.20				
Hill River—								
1888.....	1	20.00	160	54.10				
1891.....	1	45.00	160	61.95				
1892.....					1	\$61.95	160	\$68.75
Chester—								
1891.....	3	2,150.00	751.90	1,158.36				
Sletten—								
1888.....	1	25.00	160	63.87				
1889.....					1	69.80	160	75.42
1891.....	2	1,000.00	322.61	1,211.73				
1892.....					1	514.15	162.61	555.14
Lessor—								
1892.....	1	450.00	160	529.48				
Lambert--								
1886.....	3	900.00	479.56	1,335.89				
1887.....	2	330.00	320	510.17				
1889.....	2	600.00	320	894.75				
1890.....	4	1,725.00	640	2,322.55				
1891.....	11	5,173.50	1,760	5,170.25	1	761.56	160	821.70
1892.....	9	3,939.45	1,399.88	5,615.38				
T. 151, R. 41--								
1886.....	1	300.00	160	413.63				
1889.....	1	400.00	160	517.80				
1891.....	4	1,450.00	640	1,455.97				
1892.....	1	400.00	160.50	529.00				
Winger--								
1890.....	1	300.00	160	391.25				
1892.....	1	300.00	160	453.83				
Knute--								
1892.....	1	450.00	160	600.00				
Badger--								
1888.....	3	412.50	480	621.15				
1890.....	2	510.00	317.02	639.39				
1891.....	13	5,397.50	2,000	6,874.17				
1892.....	5	2,534.50	720.83	3,308.09				

TABLE X.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
Poplar River—								
1884.....	1	\$501.00	160	\$652.00				
1885.....	4	1,025.00	556.96	1,296.33	1	\$652.00	160	\$697.64
1886.....	3	675.00	480	1,010.69				
1887.....	4	970.00	640	1,036.88	1	330.75	160	364.20
1888.....	5	130.00	480	231.10				
1889.....	1	230.00	160	363.84				
1890.....	6	4,000.00	1,120	5,980.84	1	363.84	160	389.54
1891.....	12	7,935.00	2,080	7,199.00				
1892.....	4	2,150.00	637.33	2,926.07	1	141.00	160	147.00
Emardville—								
1884.....	4	769.00	640	1,033.30				
1885.....	1	220.00	160	329.55				
1886.....	1	350.00	159.54	534.54	1	329.55	160	362.30
1887.....	3	385.00	476.80	646.72				
1888.....	2	445.00	320	719.35				
1889.....	1	350.00	160	589.20				
1890.....	1	220.00	160	345.30				
1891.....	9	3,786.26	1,439.16	5,396.49				
1892.....	1	350.00	160	520.94				
Wvandotte—								
1885.....	1	30.00	160	85.50				
1886.....	1	350.00	160	465.10				
1887.....	6	611.50	961.60	921.18				
1888.....	1	52.50	153	86.50				
1889.....	6	1,258.70	960	1,644.15				
1890.....	2	800.00	320	1,093.33				
1891.....	1	60.00	160	127.47				
Garden—								
1884.....	1	25.00	160	73.60				
Woodside—								
1885.....	2	1,143.16	324.50	1,510.99				
1888.....	1	300.00	143	391.00	1	391.00	157.22	430.18
1889.....	1	250.00	177	338.65				
1891.....	1	600.00	125.50	768.50				
Grove Park—								
1884.....	2	615.00	320	876.12				
1885.....	1	250.00	80	383.48				
1886.....	5	1,975.00	790.05	3,322.88				
1887.....	5	980.00	760.27	1,692.12				
1888.....	1	500.00	160	923.57				
1889.....	1	600.00	160	818.75				
1890.....	6	2,645.00	961.26	3,550.50				
1891.....	7	5,617.35	1,080.52	5,858.87				
1892.....	4	1,782.55	485	2,486.16				
Terre Bonne—								
1883.....	1	340.00	160	493.60	1	493.60	160	538.81
1884.....	4	535.00	640	512.17				
1885.....	11	4,356.00	1,760	6,097.31				
1886.....	16	5,910.75	2,554.29	9,376.14	2	1,231.32	320	1,288.91
1887.....	5	1,520.00	760	2,249.07				
1888.....	5	670.78	800	918.57				
1889.....	4	1,335.00	640	2,283.63				
1890.....	6	4,860.00	1,260	5,221.03				
1891.....	11	7,305.00	1,720	7,538.69	1	710.51	160	775.17
1892.....	2	1,191.35	318	1,756.75	1	217.84	160	239.62
Gervais—								
1883.....	1	500.00	160	651.13				
1884.....	3	957.00	427.81	1,612.67				
1885.....	3	628.71	440	916.51	1	542.67	117	590.00
1886.....	4	1,000.00	624.25	1,332.99				
1887.....	5	1,255.00	791.40	1,775.43				
1888.....	1	45.00	160	274.94				
1889.....	2	750.00	280	525.52				
1890.....	8	2,865.44	1,240.27	3,974.89				
1891.....	5	1,400.00	796.33	2,027.50				
1892.....	2	1,450.00	318.52	2,053.72	1	339.64	160	367.61

TABLE X.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
<b>River Falls—</b>								
1885	4	\$1,350.00	381	\$1,513.63	.....	.....	.....	.....
1886	2	2,056.53	331.50	2,714.06	.....	.....	.....	.....
1887	4	357.50	609.77	723.69	.....	.....	.....	.....
1888	2	600.00	320	989.73	.....	.....	.....	.....
1889	2	495.25	330.30	714.73	.....	.....	.....	.....
1890	2	690.00	200	881.74	.....	.....	.....	.....
1891	3	1,150.00	479.29	1,552.33	1	\$361.06	80	\$401.13
<b>Rocksbury—</b>								
1883	1	3,250.00	155.50	3,653.56	.....	.....	.....	.....
1885	1	1,100.00	160	1,358.32	.....	.....	.....	.....
1886	1	42.31	160	97.39	.....	.....	.....	.....
1887	1	500.00	160	660.10	.....	.....	.....	.....
1888	2	1,550.00	480	1,581.50	.....	.....	.....	.....
1889	2	875.00	306.25	1,339.80	1	356.60	160	395.68
1891	2	290.41	209.50	411.27	.....	.....	.....	.....
1892	.....	.....	.....	.....	1	258.07	160	283.94
<b>North—</b>								
1884	1	500.00	160	610.84	.....	.....	.....	.....
1885	2	513.00	240	707.63	.....	.....	.....	.....
1886	1	350.00	150.75	468.83	.....	.....	.....	.....
1887	2	625.00	320.36	903.45	.....	.....	.....	.....
1888	3	1,450.00	480	2,172.90	.....	.....	.....	.....
1889	1	210.00	160	380.35	1	1,318.45	160	1,421.45
1890	2	750.00	320	1,290.52	.....	.....	.....	.....
1891	2	900.00	320	1,150.53	.....	.....	.....	.....
<b>Garfield—</b>								
1883	.....	.....	.....	.....	1	339.38	80	404.88
1886	3	1,301.00	478.24	1,691.05	.....	.....	.....	.....
1887	1	230.00	160	187.50	.....	.....	.....	.....
1888	2	950.00	326	1,338.35	.....	.....	.....	.....
1890	4	2,376.00	600	3,137.81	.....	.....	.....	.....
1891	5	3,388.00	920	4,325.49	.....	.....	.....	.....
1892	2	495.00	320	739.63	.....	.....	.....	.....
<b>Godfrey—</b>								
1885	5	1,680.00	716	2,090.71	.....	.....	.....	.....
1886	2	475.00	320	537.56	2	630.00	276.97	762.91
1887	2	530.00	280	786.12	1	86.40	160	95.15
1888	1	501.00	160.97	655.66	.....	.....	.....	.....
1889	2	2,150.00	310	2,655.64	.....	.....	.....	.....
1890	4	1,077.50	614.16	1,727.21	.....	.....	.....	.....
1891	7	3,175.00	1,037	4,300.65	.....	.....	.....	.....
1892	3	530.00	480	723.82	.....	.....	.....	.....
<b>Tilden—</b>								
1884	1	400.00	160	491.27	.....	.....	.....	.....
1885	8	1,395.00	1,279.40	2,101.69	1	312.00	160	327.68
1886	2	440.00	319.40	630.55	.....	.....	.....	.....
1887	5	1,700.00	800	2,388.22	.....	.....	.....	.....
1888	1	500.00	159.33	961.08	.....	.....	.....	.....
1889	2	622.50	320	787.45	.....	.....	.....	.....
1890	8	2,750.00	1,140	3,876.45	.....	.....	.....	.....
1891	16	7,794.80	2,416.04	10,645.30	.....	.....	.....	.....
1892	3	845.00	480	1,212.24	.....	.....	.....	.....
<b>Lake Pleasant—</b>								
1883	3	1,335.00	480	1,724.80	1	438.28	160	458.67
1884	5	1,675.00	800	2,197.97	1	765.55	159	831.05
1885	12	4,673.00	1,920	6,284.11	2	1,444.94	1,600	1,646.06
1886	4	1,200.00	640	1,997.31	2	793.65	320	872.36
1887	4	1,809.33	640	2,590.44	1	117.40	160	129.10
1888	1	1,150.00	160	1,598.78	1	1,241.34	160	1,365.47
1889	2	1,450.00	320	1,781.74	.....	.....	.....	.....
1890	11	11,052.40	1,661.49	11,544.63	.....	.....	.....	.....
1891	14	8,376.00	2,218	10,089.69	.....	.....	.....	.....
1892	5	1,055.00	800	1,298.51	1	905.00	148.84	981.18



TABLE X.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
<b>Red L. Falls—</b>								
1883					1	\$3,200.00	220.50	\$3,426.00
1884	6	\$1,487.42	952.97	\$1,853.75				
1885	7	7,600.00	840	8,488.87	2	632.57	240	639.07
1886	4	2,575.00	640	2,238.13	1	96.68	160	106.45
1887	8	6,920.00	1,450.55	8,415.12				
1888	1	225.00	160	361.05	1	448.07	160	497.20
1889	2	445.00	320	740.81				
1890	10	9,203.41	1,471.94	10,693.12				
1891	10	8,112.50	1,616.65	10,675.30				
1892	5	4,470.00	798	6,164.82	2	1,538.05	320	1,656.45
<b>Black River—</b>								
1883	1	400.00	160	533.13				
1884	3	835.00	480	1,185.39	1	533.13	160	586.43
1885	3	990.00	480	475.05	1	77.40	160	78.90
1886	4	1,350.00	640	2,215.05				
1887	11	2,552.50	1,760	3,846.62				
1888	1	350.00	160	510.00				
1889	5	1,976.75	960	2,180.46				
1890	3	1,300.00	480	1,964.14				
1891	6	1,727.50	1,240	2,144.29				
1892	2	403.25	320	514.97				
<b>Sanders—</b>								
1885	3	977.50	480	1,072.04				
1887	3	1,120.00	480	1,602.16				
1888	3	1,711.25	480	2,116.12				
1889	2	900.00	320	853.70				
1890	6	1,720.29	960.38	2,157.69				
1891	7	2,967.50	1,222.49	4,366.47				
<b>Norden—</b>								
1885	1	397.21	160	487.76				
1889	1	300.00	160	443.44				
1890	3	1,070.00	480	1,298.47				
1891	1	30.00	160	72.43				
<b>Liberty—</b>								
1883	2	570.00	240	831.75				
1884	3	1,536.00	475.28	2,076.80				
1885	1	435.00	160	713.30				
1886	1	800.00	156.46	1,007.13				
1889	1	700.00	160	928.10				
1890	4	1,397.22	640	1,957.71	1	167.45	160	184.15
1891	4	2,050.00	639.50	2,994.79				
1892					1	597.35	160	662.08
<b>Onstad—</b>								
1884	2	90.00	320	191.90				
1885	5	1,305.00	791	1,970.29				
1886	3	490.00	480	738.78	2	597.07	311.01	647.44
1887	1	35.30	160	80.15	1	81.50	160	89.65
1888	2	1,500.00	320	1,864.90				
1889	1	250.00	160	347.25				
1890	4	2,400.00	592.90	3,301.19				
1891	9	3,761.00	1,218	5,257.35				
<b>Kertsonville—</b>								
1883	2	495.00	320	651.44				
1884	2	455.00	329.44	617.93				
1885	7	2,235.00	1,086.48	3,131.96				
1886	7	1,585.00	1,420	2,569.53	2	1,163.85	320	1,219.66
1887	2	650.00	320	632.03	2	512.93	320	564.94
1889	3	1,600.00	480	2,066.66				
1890	3	2,040.00	486.62	2,970.14				
1891	4	2,150.00	640	3,235.01	1	877.65	162.50	946.00
1892	1	52.50	160	98.50				

TABLE X.—Continued.

TOWNSHIPS AND YEARS.	FORCLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
Gentilly—								
1879.....	1	\$6,500.00	1,394.53	\$1,501.63	...	...	...	...
1882.....	4	6,750.00	1,594.53	12,051.72	...	...	...	...
1883.....	2	900.00	234.41	1,183.00	1	\$3,470.00	952.81	\$1,679.16
1884.....	1	225.00	80	308.19	2	850.54	240	916.04
1885.....	2	655.00	320	883.93	...	...	...	...
1886.....	5	2,380.00	765.60	2,980.00	1	578.25	160	631.24
1887.....	2	1,119.30	320	1,529.45	...	...	...	...
1888.....	2	2,880.00	320	2,008.34	...	...	...	...
1889.....	7	5,045.00	1,080	6,642.06	...	...	...	...
1890.....	12	9,022.50	2,072.98	11,439.12	...	...	...	...
1891.....	1	37.50	160	49.72	...	...	...	...
1892.....	1	37.50	160	49.72	...	...	...	...
Louisville—								
1883.....	2	940.00	320	1,221.05	...	...	...	...
1884.....	1	400.00	160	515.23	...	...	...	...
1885.....	6	1,614.00	960	2,072.12	...	...	...	...
1886.....	2	700.00	320	978.85	...	...	...	...
1887.....	5	930.00	804.50	1,492.16	...	...	...	...
1888.....	1	37.50	179.88	60.95	...	...	...	...
1889.....	4	541.00	640	763.09	...	...	...	...
1890.....	2	1,200.00	306.66	15,83.37	...	...	...	...
1891.....	4	1,140.00	574.25	1,665.26	...	...	...	...
Polk Centre—								
1884.....	5	1,595.00	800	2,128.65	1	8,785.00	160	9,645.00
1885.....	2	750.00	320	1,157.51	...	...	...	...
1886.....	7	1,155.00	1,120	2,058.30	...	...	...	...
1887.....	1	600.00	160	807.57	...	...	...	...
1888.....	5	2,400.00	890	2,947.28	...	...	...	...
1891.....	5	2,400.00	890	2,947.28	...	...	...	...
Bray —								
1883.....	3	970.00	480	1,291.25	...	...	...	...
1884.....	2	80.00	320	177.00	...	...	...	...
1885.....	3	710.00	640	1,012.75	...	...	...	...
1886.....	1	300.00	160	461.85	...	...	...	...
1887.....	4	1,500.00	640	2,116.80	...	...	...	...
1888.....	2	425.00	320	593.63	...	...	...	...
1891.....	3	1,050.00	360.33	1,824.41	...	...	...	...
Numedal—								
1884.....	2	80.00	320	177.00	...	...	...	...
1885.....	1	325.00	160	441.29	...	...	...	...
1887.....	2	750.00	320	864.06	...	...	...	...
1889.....	1	500.00	160	633.55	...	...	...	...
1891.....	2	1,200.00	320	1,529.84	...	...	...	...
1892.....	1	52.50	160	111.55	...	...	...	...
Reis—								
1880.....	2	740.00	160	1,065.04	...	...	...	...
1883.....	2	630.00	1,760	741.10	1	399.10	1,600	444.00
1884.....	2	4,040.00	1,753.73	5,717.82	...	...	...	...
1885.....	2	540.00	313.73	833.66	...	...	...	...
1886.....	1	600.00	160	770.00	...	...	...	...
1887.....	1	1,200.00	320	1,503.37	...	...	...	...
1888.....	1	1,025.24	160	1,258.35	...	...	...	...
1889.....	2	8,100.00	1,920	10,489.00	...	...	...	...
1890.....	3	970.00	473.73	862.33	...	...	...	...
1891.....	2	2,200.00	320	2,934.11	1	169.75	160	180.70
1892.....	2	2,200.00	320	2,934.11	...	...	...	...
Russia—								
1884.....	1	50.00	160	100.25	...	...	...	...
1885.....	1	400.00	160	465.55	...	...	...	...
1886.....	2	500.00	320	1,053.06	...	...	...	...
1888.....	1	450.00	160	581.60	...	...	...	...
1889.....	2	645.00	320	938.40	...	...	...	...
1891.....	3	2,907.00	640	3,543.92	...	...	...	...

TABLE X.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
Fairfax—								
1879 .....	2	\$4,230.00	385.90	\$4,718.50	.....	.....	.....	.....
1886 .....	2	1,100.00	320	1,360.34	.....	.....	.....	.....
1887 .....	1	600.00	160	965.75	1	\$499.55	160	\$522.60
1888 .....	3	4,800.00	480	6,125.84	.....	.....	.....	.....
1889 .....	1	1,000.00	154	1,162.60	.....	.....	.....	.....
1890 .....	4	1,913.36	520	2,255.27	.....	.....	.....	.....
1891 .....	4	4,555.06	680	5,352.78	.....	.....	.....	.....
1892 .....	3	2,607.50	400	3,354.80	.....	.....	.....	.....
Crookston—								
1880 .....	2	3,963.45	440	4,143.16	.....	.....	.....	.....
1883 .....	7	7,654.15	822.80	9,461.43	1	602.72	160	615.44
1884 .....	2	778.00	187.70	1,818.86	2	5,583.68	48.70	6,692.04
1885 .....	6	2,160.00	838.45	3,385.59	1	455.01	160	481.55
1886 .....	6	3,923.31	954	6,471.77	.....	.....	.....	.....
1887 .....	2	3,014.76	169.41	3,129.40	1	788.61	154.88	865.77
1888 .....	3	4,900.00	798.26	6,032.10	.....	.....	.....	.....
1889 .....	2	3,200.28	78.30	1,300.00	.....	.....	.....	.....
1890 .....	4	2,978.08	821.34	3,582.80	.....	.....	.....	.....
1891 .....	3	1,214.60	370	1,302.09	1	761.90	235.14	834.75
1892 .....	1	1,200.00	120	1,384.02	3	976.38	310	1,057.96
Parnell—								
1883 .....	2	700.00	320	921.89	.....	.....	.....	.....
1884 .....	1	200.00	160	310.89	.....	.....	.....	.....
1885 .....	2	792.50	320.50	795.52	.....	.....	.....	.....
1886 .....	3	1,081.50	480	1,591.68	.....	.....	.....	.....
1887 .....	3	4,690.00	960	5,501.44	.....	.....	.....	.....
1888 .....	3	2,020.33	480	3,309.25	.....	.....	.....	.....
1889 .....	1	350.00	160	497.30	.....	.....	.....	.....
1890 .....	5	2,450.00	1,277.92	3,261.83	.....	.....	.....	.....
1891 .....	3	1,550.00	480	2,029.48	1	80.10	160	89.35
1892 .....	1	500.00	160	691.00	.....	.....	.....	.....
Belgium—								
1883 .....	3	1,025.00	480	1,402.97	.....	.....	.....	.....
1884 .....	3	975.00	482.68	1,315.17	.....	.....	.....	.....
1885 .....	2	850.00	320	1,127.50	.....	.....	.....	.....
1886 .....	2	600.00	280	869.90	.....	.....	.....	.....
1887 .....	4	1,051.15	640	1,597.05	.....	.....	.....	.....
1888 .....	3	1,500.00	480	2,051.69	.....	.....	.....	.....
1889 .....	2	650.00	323.21	860.39	.....	.....	.....	.....
1890 .....	3	1,580.00	480	2,346.94	.....	.....	.....	.....
1892 .....	1	350.00	160	503.45	.....	.....	.....	.....
T. 153, R. 46—								
1883 .....	2	440.00	320	625.27	.....	.....	.....	.....
1884 .....	2	950.00	320	537.35	.....	.....	.....	.....
1885 .....	4	1,290.00	640	1,733.18	.....	.....	.....	.....
1886 .....	1	400.00	160	595.94	.....	.....	.....	.....
1887 .....	1	40.00	160	111.63	.....	.....	.....	.....
1888 .....	1	800.00	160	1,032.10	.....	.....	.....	.....
1889 .....	.....	.....	.....	.....	1	1,032.02	160	1,136.15
1890 .....	1	1,776.15	160	728.17	.....	.....	.....	.....
1891 .....	2	1,600.00	320	2,137.21	.....	.....	.....	.....
1892 .....	3	1,250.00	477.32	1,590.68	.....	.....	.....	.....
T. 154, R. 46—								
1884 .....	1	35.00	160	84.75	.....	.....	.....	.....
1885 .....	2	385.00	320	598.11	.....	.....	.....	.....
1886 .....	2	500.00	320	802.38	.....	.....	.....	.....
1890 .....	1	501.00	160	700.50	.....	.....	.....	.....



TABLE X.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
Hammond—								
1883.....	1	\$300.00	160	\$343.60	.....	.....	.....	.....
1884.....	1	45.00	160	92.75	.....	.....	.....	.....
1885.....	1	400.00	160	582.00	.....	.....	.....	.....
1886.....	1	500.00	160	778.63	.....	.....	.....	.....
1887.....	1	70.00	160	107.56	.....	.....	.....	.....
1888.....	4	2,550.00	643.67	3,424.20	.....	.....	.....	.....
1890.....	2	3,200.00	834	3,911.90	.....	.....	.....	.....
1891.....	2	840.70	360	991.44	.....	.....	.....	.....
Andover—								
1881.....	1	460.00	160	600.00	.....	.....	.....	.....
1882.....	.....	.....	.....	.....	1	\$600.00	160	\$662.35
1884.....	2	1,281.25	160.14	1,610.80	.....	.....	.....	.....
1885.....	1	800.00	160	989.90	.....	.....	.....	.....
1886.....	1	1,000.00	160	1,222.54	.....	.....	.....	.....
1887.....	.....	.....	.....	.....	1	1,222.54	160	1,352.40
1889.....	2	1,900.00	280	1,955.61	.....	.....	.....	.....
1892.....	1	2,926.25	160	4,885.34	.....	.....	.....	.....
Lowell—								
1881.....	1	450.00	160	537.00	.....	.....	.....	.....
1882.....	3	2,175.00	160.68	2,404.49	1	537.53	160	579.96
1883.....	1	230.00	17.20	331.00	.....	.....	.....	.....
1885.....	1	160.00	160	255.80	.....	.....	.....	.....
1886.....	2	1,625.00	320	2,187.75	.....	.....	.....	.....
1888.....	1	5,820.67	240	4,400.00	.....	.....	.....	.....
1889.....	1	40.00	320	171.77	.....	.....	.....	.....
1890.....	1	1,000.00	160	1,327.82	.....	.....	.....	.....
1891.....	3	3,300.00	630.18	3,769.95	.....	.....	.....	.....
1892.....	.....	.....	.....	.....	1	477.13	159.70	516.60
Fanny—								
1883.....	2	1,500.00	320	1,401.48	.....	.....	.....	.....
1884.....	2	1,810.00	320	1,474.22	.....	.....	.....	.....
1885.....	2	1,300.00	307.04	1,865.76	.....	.....	.....	.....
1886.....	5	3,720.00	800	4,876.17	.....	.....	.....	.....
1887.....	3	773.80	480	912.67	.....	.....	.....	.....
1888.....	1	840.00	160	983.85	.....	.....	.....	.....
1890.....	2	1,950.00	320	1,629.35	.....	.....	.....	.....
1891.....	3	2,080.00	480	2,463.65	.....	.....	.....	.....
1892.....	1	800.00	160	898.85	1	56.55	160	62.25
Euclid—								
1884.....	2	600.00	299.56	2,132.01	.....	.....	.....	.....
1885.....	5	4,475.00	779	6,154.72	.....	.....	.....	.....
1886.....	2	950.00	300	1,383.40	.....	.....	.....	.....
1887.....	5	1,650.00	469.46	2,322.60	.....	.....	.....	.....
1888.....	.....	.....	.....	.....	1	674.35	160	727.68
1889.....	.....	.....	.....	.....	1	245.40	320	270.29
1891.....	3	2,231.54	480	2,969.32	1	539.69	160	569.90
1892.....	.....	.....	.....	.....	1	1,153.02	160	1,280.60
Angus—								
1884.....	3	559.00	480	652.93	.....	.....	.....	.....
1885.....	1	450.00	160	576.65	1	576.65	160	613.20
1886.....	4	3,800.00	1,120	4,722.47	.....	.....	.....	.....
1887.....	4	2,560.00	799.04	3,399.09	1	789.65	160	867.74
1888.....	.....	.....	.....	.....	1	642.92	160	714.22
1889.....	1	1,050.00	160	1,140.58	.....	.....	.....	.....
1890.....	2	1,100.00	320	1,830.53	.....	.....	.....	.....
1891.....	2	2,900.00	480	4,144.78	1	928.54	160	998.62
1892.....	1	100.00	160	155.65	1	1,300.00	160	1,427.83
Brislet—								
1886.....	1	600.00	160	871.90	.....	.....	.....	.....
1887.....	1	450.00	160	638.25	.....	.....	.....	.....
1888.....	1	1,200.00	320	1,461.79	.....	.....	.....	.....
1889.....	1	700.00	157	949.60	.....	.....	.....	.....
1890.....	3	1,925.00	480	2,576.13	.....	.....	.....	.....
1891.....	1	700.00	160	983.25	.....	.....	.....	.....
Hubbard—								
1884.....	1	2,100.00	145.08	2,034.36	.....	.....	.....	.....
1889.....	2	1,002.00	320	1,863.45	.....	.....	.....	.....
1892.....	1	600.00	160	750.00	.....	.....	.....	.....

TABLE X.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions
Vineland--								
1890 .....	1	\$501.00	160	\$675 60	.....	.....	.....	.....
1891 .....	1	35.00	80	94.30	.....	.....	.....	.....
Roome--								
1886 .....	2	556.00	320	767.50	.....	.....	.....	.....
1888 .....	1	453.77	120	591.00	.....	.....	.....	.....
1889 .....	2	1,701.00	398.44	2,146.04	.....	.....	.....	.....
1891 .....	1	400.00	80	527.12	.....	.....	.....	.....
Fisher--								
1880 .....	1	500.00	160	1,025.00	.....	.....	.....	.....
1881 .....	.....	.....	.....	.....	1	\$1,025.50	166.75	\$1,128.00
1883 .....	1	1,150.00	166.75	1,114.53	.....	.....	.....	.....
1884 .....	4	1,775.00	720	2,431.78	.....	.....	.....	.....
1885 .....	3	2,662.12	1,002.72	3,610.74	3	1,631.78	560	1,796.85
1886 .....	1	1,200.00	240	1,608.50	.....	.....	.....	.....
1887 .....	1	600.00	160	792.30	1	1,608.50	320	1,754.10
1888 .....	2	2,574.71	400	2,885.77	.....	.....	.....	.....
1889 .....	2	3,700.00	360	4,527.59	.....	.....	.....	.....
1892 .....	1	1,275.00	120	2,129.96	.....	.....	.....	.....
Nesbit--								
1880 .....	1	1,700.00	160	1,941.52	.....	.....	.....	.....
1881 .....	.....	.....	.....	.....	1	1,941.50	160	2,135.15
1884 .....	1	75.00	160	128.35	.....	.....	.....	.....
1885 .....	.....	.....	.....	.....	1	326.00	101.56	358.60
1886 .....	1	1,000.00	160	1,352.85	.....	.....	.....	.....
1886 .....	1	1,500.00	160	1,965.55	.....	.....	.....	.....
1887 .....	1	1,000.00	157.97	1,300.50	.....	.....	.....	.....
1889 .....	2	1,085.00	320	947.60	2	1,279.25	320	1,364.90
1890 .....	2	2,800.00	480	3,431.09	.....	.....	.....	.....
Keystone--								
1884 .....	1	60.00	160	108.60	.....	.....	.....	.....
1886 .....	1	800.00	160	1,162.72	.....	.....	.....	.....
1887 .....	3	1,750.00	480	2,353.70	.....	.....	.....	.....
1888 .....	1	600.00	160	788.45	.....	.....	.....	.....
Tabor--								
1886 .....	4	2,800.00	640	3,241.46	.....	.....	.....	.....
1888 .....	2	1,400.00	320.24	1,779.37	.....	.....	.....	.....
1890 .....	4	2,950.00	640.48	4,344.62	.....	.....	.....	.....
Farley--								
1885 .....	1	163.38	160	245.56	.....	.....	.....	.....
1886 .....	1	550.00	160	908.63	.....	.....	.....	.....
1887 .....	1	300.00	160	466.04	1	115.54	160	244.16
1888 .....	2	600.00	320	855.85	.....	.....	.....	.....
1890 .....	1	600.00	160	789.38	.....	.....	.....	.....
1891 .....	5	2,548.38	960	2,792.48	.....	.....	.....	.....
1892 .....	.....	.....	.....	.....	1	1,290.31	160	1,393.13
T 148, R 49--								
1889 .....	1	700.00	160	871.37	.....	.....	.....	.....
1890 .....	4	3,150.00	640	4,230.06	.....	.....	.....	.....
1891 .....	1	105.00	160.00	82.50	2	871.37	160	950.48
.....	.....	.....	.....	.....	.....	3,328.70	480	4,492.70
Bygland--								
1884 .....	1	250.00	80	328.43	.....	.....	.....	.....
1885 .....	.....	.....	.....	.....	1	328.43	80	354.13
1886 .....	1	142.75	30.75	280.10	.....	.....	.....	.....
1888 .....	.....	.....	.....	.....	1	560.00	160	616.05
1891 .....	1	150.00	120.75	286.46	1	265.66	240	284.35
1892 .....	1	800.00	130	982.20	.....	.....	.....	.....
Sullivan--								
1884 .....	2	1,306.00	320	1,412.90	.....	.....	.....	.....
1885 .....	1	2,800.00	320	3,403.55	.....	.....	.....	.....
1886 .....	1	1,000.00	160	624.38	.....	.....	.....	.....
1887 .....	4	2,648.00	640	2,987.61	.....	.....	.....	.....
1888 .....	.....	.....	.....	.....	1	1,519.90	160	1,636.43
1891 .....	4	3,485.00	640	3,035.86	.....	.....	.....	.....
1892 .....	1	500.000	162.75	662.75	.....	.....	.....	.....

TABLE X.—Continued.

TOWNSHIPS AND YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
Huntsville—								
1879 .....	1	\$150.00	40	\$194.16				
1883 .....	1	800.00	160	928.00				
1884 .....					1	\$928.00	160	\$992.24
1885 .....	1	482.37	160	482.37				
1886 .....	1	995.87	240	1,097.59				
1887 .....	1	9,858.15	1,080	5,058.50	1	1,097.59	120	1,307.84
1888 .....	1	1,300.00	160	1,606.35				
1891 .....	1	955.00	160	1,853.39				
1892 .....					1	703.11	160	766.15
Northland—								
1887 .....	1	653.75	160	616.72				
1892 .....					1	105.42	160	106.54
Landsville—								
1890 .....	1	125.00	160	229.62				
T. 151, R. 50—								
1880 .....	1	30.00	.11	77.00				
1887 .....	1	1,483.13	65	1,900.50				
1890 .....	1	150.00	2 40	206.55				
1891 .....					1	206.95	2.40	218.10
Grand Forks—								
1880 .....	1	100.00	40	172.92				
1882 .....	1	376.65	120	300.00				
1883 .....	2	776.60	320	1,100.47	1	300.00	120	330.00
1888 .....	1	3,551.00	174	4,050.00				
Higdem—								
1884 .....	2	850.00	322	1,080.36				
1886 .....	1	275.00	160	507.20				
1888 .....	2	650.00	240	878.65				

TABLE XI.

Mortgage foreclosures and redemptions on lands, other than town lots, in Polk County, Minnesota, from the organization of the county to October 1, 1892, by years.

YEARS.	FORECLOSURES.				REDEMPTIONS.			
	No.	Amount of mortgages.	Number of acres.	Amount of decrees.	No.	Amount of decrees.	Number of acres.	Amount of redemptions.
1879. ....	4	\$11,480.00	1,820.43	\$6,414.09				
1880. ....	8	7,033.45	960.11	8,424.64				
1881. ....	2	910.00	320	1,137.00	2	\$2,967.00	326.75	\$3,263.15
1882. ....	8	9,301.65	1,875.21	14,756.21	2	1,137.53	320	1,242.31
1883. ....	42	24,905.75	7,556.66	30,606.45	7	8,843.98	1,853.31	9,452.96
1884. ....	81	26,379.67	12,502.66	35,069.54	8	9,060.00	2,367.70	10,461.80
1885. ....	130	58,511.95	21,976.78	77,415.44	16	15,754.45	3,658.56	17,228.68
1886. ....	129	58,525.02	21,308.12	81,627.96	12	4,841.52	1,867.98	5,260.03
1887. ....	129	61,708.60	21,958.16	73,884.23	14	7,829.21	2,514.88	8,788.89
1888. ....	78	52,180.31	13,338.35	65,767.14	6	5,186.58	800	5,557.05
1889. ....	73	40,082.72	1,775.47	47,255.80	6	3,413.27	1,117.22	3,729.17
1890. ....	155	99,851.45	27,065.84	125,931.61	5	2,681.91	800	2,889.07
1891. ....	245	138,482.10	39,934.71	168,777.58	12	8,822.31	2,000.04	10,431.77
1892. ....	74	38,998.25	11,355.53	53,989.81	21	10,804.72	3,181.15	11,753.53
Totals. ....	1,158	\$629,320.92	193,688.03	\$791,868.83	111	\$81,242.48	20,807.59	\$87,558.41



TABLE XII.

Ratios of the acres and values of land, other than town lots, in Polk county, Minn., assessed for purposes of taxation, to those sold by mortgage foreclosure, from the organization of the county to October 1, 1892.

YEARS.	COMPARISON BY ACR'S.		Ratio of as- sessed to foreclosed lands.	COMPARISON BY VALUES.		Ratio of as- sessed val- ues to amt of sales.
	Acres of assessed land.	Acres of land sold by fore- closure.		Value of assessed lands.	Amount of foreclosure sales.	
1879.....	83,662	1,820.43	45.95	\$265,443	\$6,414.09	41.35
1880.....	207,253	960.11	215.86	1,053,314	8,424.64	125.02
1881.....	368,254	320	1,150.79	1,613,803	1,137.10	1,421.11
1882.....	368,552	1,875.21	196.54	1,800,744	14,756.21	127.45
1883.....	494,208	7,556.66	65.40	2,485,495	30,606.45	81.21
1884.....	548,545	12,502.66	43.86	2,359,835	35,069.54	67.29
1885.....	611,959	21,976.78	27.86	2,554,022	77,415.44	32.99
1886.....	663,746	21,308.12	31.15	2,576,722	81,627.96	31.58
1887.....	718,061	21,958.16	32.71	2,779,724	73,884.23	37.62
1888.....	772,454	13,338.35	57.91	3,617,092	65,767.14	55.17
1889.....	891,784	11,775.47	65.59	3,977,081	47,255.80	84.16
1890.....	983,386	27,065.84	37.43	4,055,845	125,931.61	32.20
1891.....	1,053,276	39,934.71	26.37	4,249,018	168,777.58	25.17
1892.....		11,355.53	92.75		53,989.81	78.73
Totals.....		193,688.03	40.09		\$791,868.83	42.26

TABLE XIII.

The mortgage foreclosures in Polk county, Minnesota, from the organization of the county until October 1, 1892; the number of foreclosures and the number of acres of land sold, given by years, townships and ranges. (The numbers given for the year 1892 represent the foreclosures for the nine months ending October 1.)

TOWNSHIPS AND RANGES.	1879.		1880.		1881.		1882.		1883.		1884.		1885.		1886.	
	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.
Range 39—																
Columbia.....	147															
Queen.....	148															
Eden.....	149															
Total range.....																
Range 40—																
Rosebud.....	147															
Brandsvold.....	148														1	160
Hill River.....	149															
Chester.....	150															
Total range.....															1	160
Range 41—																
Sietien.....	147															
King.....	148															
Lessor.....	149														3	479.56
Lambert.....	150														1	160
151-41.....																
Total range.....															4	639.56
Range 42—																
Winger.....	147															
Knute.....	148															
Badger.....	149															
Poplar River.....	150														3	480
Emardville.....	151														1	159.54
Wyandotte.....	152														1	160
153-42.....																
Total range.....											5	800	6	876.96	5	799.54

TABLE XIII.—Continued.

TOWNSHIPS AND RANGES.	1887.		1888.		1889.		1890.		1891.		1892.		Totals.	
	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.
Range 30—														
Columbia.....	147												1	147.40
Queen.....	148													
Eden.....	149													
Total range.....											1	147.40	1	147.40
Range 40—														
Rosebud.....	147													
Brandsvold.....	148				2	80			1	160	1	160	4	400
Hill River.....	149												1	160
Chester.....	150		1	160					1	160			2	320
									3	751.90			3	751.90
Total range.....			1	160	2	80			5	1,071.90	1	160	10	1,631.90
Range 41—														
Sletten.....	147													
King.....	148		1	160					2	322.61			3	482.61
Lessor.....	149													
Lambert.....	150	2	320	4		640			11	1,760	9	1,389.88	1	160
151-41.....			1	160					4	640	1	160.50	7	1,120.50
Total range.....			3	480	4	640			17	2,722.61	11	1,730.38	42	6,682.55
Range 42—														
Winger.....	147													
Knutle.....	148				1	160							2	320
Badger.....	149												1	160
Poplar River.....	150	3	480	6		317.02			13	2,000	5	720.83	23	3,517.85
Euclidville.....	151	4	640	1		1,120			12	2,080	4	637.33	38	6,314.20
Wyandotte.....	152	3	320	1		160			9	1,439.16	1	160	23	3,675.50
153-42.....			1	153	6	320			1	160			18	2,874.00
Total range.....	13	2,078.40	9	1,433	8	1,280	12	2,077.02	35	5,679.16	12	1,838.16	105	16,862.24



TABLE XIII.—Continued.

TOWNSHIPS AND RANGES.	1879.		1880.		1881.		1882.		1883.		1884.		1885.		1886.	
	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.
Range 43—																
Garden.....	147										1	160	2	324.50	2	324.50
Gods.....	148										2	320	1	80	5	790.05
Grove Park.....	149										4	640	11	1,700	16	2,534.29
Terre Bonne.....	150										3	427.81	3	440	4	634.25
Gervais.....	151										3	427.81	4	381	2	331.50
River Falls.....	152										1	155.50	1	160	1	160
Rocksburg.....	153										1	160	2	240	1	150.75
North.....	154										1	160	2	240	1	150.75
Total range.....									3	475.50	11	1,707.81	24	3,385.50	29	4,610.84
Range 44—																
Garfield.....	147														3	478.24
Godfrey.....	148														2	320
Tilden.....	149										1	160	8	1,279.40	2	319.40
Lake Pleasant.....	150										5	800	12	1,920	4	640
Red Lake Falls.....	151										6	952.97	7	840	4	640
Black River.....	152										3	480	3	480	4	640
Sanders.....	153										1	160	3	480	3	480
Norden.....	154										1	160	1	160	1	160
Total range.....									4	640	15	2,392.97	39	5,875.40	19	3,037.64
Range 45—																
Liberty.....	147														1	154.46
Onstad.....	148										3	475.28	5	791	3	480
Kirtsonville.....	149										2	320	7	1,086.48	7	1,420
Gentilly.....	150										2	320	2	320	5	765.60
Louisville.....	151										1	160	6	960	2	320
Polk Center.....	152										5	800	3	640	2	320
Bray.....	153										2	320	3	640	1	160
Numedal.....	154										2	320	1	160	1	160
Total range.....	1	1,394.53			4	1,594.53			11	1,594.41	18	2,804.72	25	4,117.48	21	3,622.06

TABLE XIII.—Continued.

TOWNSHIPS AND RANGES.	1887.		1888.		1889.		1890.		1891.		1892.		Totals.	
	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.
Range 43—														
Garden.....	147			143				177		125.50			1	160
Goodside.....	148							961.26	1	125.50			5	770
Grove Park.....	149	760.27		160	1	160	6	640	7	1,120.52	4	485	32	4,837.16
Terre Bonne.....	150	760	4	800	4	640	6	1,280	11	1,720	2	318	65	10,612.29
Gervais.....	151	791.46	5	160	2	280	8	1,240.27	5	796.33	2	318.52	34	5,238.58
River Falls.....	152	609.77	2	320	2	330.30	2	200	3	479.29			19	2,651.86
Rocksburg.....	153	160	2	480	2	306.25			2	209.50			10	1,631.25
North.....	154	320.36	3	480	1	160	2	320	2	320			14	2,151.11
Total range.....	22	3,401.80	15	2,543	12	1,876.55	25	4,158.53	31	4,771.14	8	1,121.52	180	28,052.19
Range 44—														
Garfield.....	147	160	2	326			4	600	5	920	2	320	17	2,804.24
Godfrey.....	148	280	1	160.97			4	614.16	7	1,037	3	480	26	3,918.13
Tilden.....	149	800	1	159.33			8	1,140	16	2,416.04	3	480	46	7,074.17
Lake Pleasant.....	150	940	1	160	2	320	11	1,661.49	14	2,218	5	800	61	9,639.49
Red Lake Falls.....	151	1,450.55	1	160	2	320	10	1,471.94	10	1,616.65	5	798	53	8,250.11
Black River.....	152	1,760	1	160	5	960	3	480	6	1,240	3	320	39	6,680
Sanders.....	153	480	3	480	2	320	6	960.38	7	1,222.49	2		24	3,942.87
Norden.....	154				1	160	3	480	1	160			6	960
Total range.....	34	5,570.55	10	1,606.30	16	2,710	49	7,407.97	66	10,830.18	20	3,198	272	43,269.01
Range 45—														
Liberty.....	147				1	160	4	640	4	639.50			16	2,471.24
Onstad.....	148	160	2	320	3	480	4	592.90	9	1,218			27	4,041.90
Kertsonville.....	149	320			1	160	4	486.62	4	640	1	160	31	5,242.54
Gentilly.....	150		2	320	2	320	7	1,080	12	2,072.98	1	160	37	8,342.05
Louisville.....	151	804.50	1	179.88	4	640	2	306.66		574.25			29	4,265.29
Polk Center.....	152	1,120	1	160					5	800			20	3,200
Bray.....	153	640	2	320					3	360.33			18	2,620.33
Nimmedal.....	154	320			1	160			2	320	1	160	9	1,440
Total range.....	21	3,364.50	8	1,299.88	12	1,920	20	3,106.18	43	6,625.06	3	480	187	31,923.35

TABLE XIII.—Continued.

TOWNSHIPS AND RANGES.	1879.		1880.		1881.		1882.		1883.		1884.		1885.		1886.	
	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.
Range 46—																
Tels.....	147								2	1,760				1,753.73	2	313.73
Russia.....	148		2	160							1	160		160	2	320
Fairfax.....	149	385.90													2	320
Crockston.....	150		2	440					7	822.80	2	187.70		838.45	6	954
Parnell.....	151								2	320	2	160		320.50	3	480
Belgium.....	152								3	480	3	482.68		280	2	260
152-46.....	153								2	320	2	320		640	1	160
154-46.....	154										1	160		320	2	320
Total range.....	2	385.90	4	600					16	3,702.80	10	1,470.38	19	4,352.68	20	3,147.73
Range 47—																
147-47.....	147															
Hammond.....	148								1	160				160	1	160
Andover.....	149										2	160.14		160	1	160
Lowell.....	150				1	160	3	160.68	1	17.20				160	2	320
Fanny.....	151				1				2	320	2	320		307.04	5	800
Euclid.....	152										2	200.56		770	2	300
Angus.....	153										3	480		160	4	1,120
Bristel.....	154														1	160
Total range.....					2	320	3	160.68	4	497.20	10	1,419.70	11	1,726.04	16	3,020
Range 48—																
Hubbard.....	147															
Vineyard.....	148										1	145.08				
Roome.....	149														2	320
Fisher.....	150		1	160					1	160.75	4	720		1,002.72	1	240
Nesbit.....	151		1	160							1	160			1	160
Keystone.....	152														1	160
Tabor.....	153														4	640
Farley.....	154													160	1	160
Total range.....			2	320					1	166.75	7	1,185.08	4	1,102.72	10	1,680



TABLE XIII.—Continued.

TOWNSHIPS AND RANGES.	1887.		1888.		1889.		1890.		1891.		1892.		TOTALS.	
	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.
Range 46—														
Reis.....	1	160	1	320	1	160	2	1,920	3	473.73	2	320	18	7,341.49
Russta.....	1	160	1	160	2	320				640			10	1,766
Fairfax.....	1	160	3	480	1	154	4	520	4	680	3	400	20	3,090.90
Crookston.....	2	169.41	2	738.26	2	78.30		821.34		370		120	38	5,600.26
Parnell.....	3	960	3	480	1	160	5	1,277.92	3	480	1	160	24	4,798.42
Belgium.....	3	640	3	480	2	323.21	3	480			1	160	23	3,645.80
153-46.....	1	160	1	160			1	160	2	320	3	477.32	17	2,717.32
154-46.....							1	160					6	960
Total range.....	12	2,240.41	15	2,878.26	9	1,195.51	20	5,339.26	18	2,963.73	11	1,637.32	156	20,922.98
Range 47—														
Hammond.....	1	160	4	643.67			2	834	2	360			13	2,637.67
Andover.....					2	320					1	160	8	1,080.14
Lowell.....	1	240	1	160	1	320	1	160	3	630.18			14	2,168.06
Fanny.....	3	480	1		2		2	320	3	480	1	160	21	3,347.04
Euclid.....	3	469.46							3	480			15	2,328.02
Angus.....	4	799.04	1	160	1	160	1	320	2	480	1	160	17	3,619.04
Brislet.....	1	160	1	320		157	3	480	1	160			8	1,437
Total range.....	12	2,068.50	7	1,363.67	5	917	9	2,114	14	2,500.18	3	480	96	16,676.97
Range 48—														
Hubbard.....					2	320					1	160	4	625.08
Vineland.....							1	160	1	80			2	240
Roome.....					2	398.44			1				6	918.44
Fisher.....	1	160	2	400	2	360	2	320	1		1	120	16	3,329.47
Nesbit.....	1	160	1		1	157.97	2						9	1,597.97
Keystone.....	3	480							2	480			6	960
Tabor.....	2	320.24					4	640.48					10	1,600.72
Farley.....	1	160	2	320			1	160	5	960			11	1,920.00
Total range.....	6	960	8	1,320.24	7	1,236.41	8	1,280.48	9	1,600	2	280	64	11,191.68

TABLE XIII.—Continued.

TOWNSHIPS AND RANGES.	1873.		1880.		1881.		1882.		1883.		1884.		1885.		1886.	
	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.
Range 49—																
147-49 .....	147															
148-49 .....	148															
Tyusid .....	149															
Bygland .....	150															30.75
Huntsville .....	151	40							1	160	1	80	1	160	1	240
Sullivan .....	152										2	320	1	320	1	160
Northland .....	153															
Sandsville .....	154															
Total range .....	1	40							1	160	3	400	2	480	3	430.75
Range 50 —																
151-50 .....	151		1	11												
Grand Forks .....	152		1	40			1	130	2	320					1	160
Higdem .....	153										2	322				
Higdem .....	154															
Total range .....			2	40.11			1	130	2	320	2	322			1	160
Polk county .....	4	1,820.43	8	900.11	2	320	8	1,875.21	42	7,556.66	81	12,502.06	130	21,976.75	129	21,308.12

TABLE XIII.—Continued

TOWNSHIPS AND RANGES.	1887.		1888.		1889.		1890.		1891.		1892.		TOTALS.	
	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.	No.	Number of acres.
Range 49—														
147-49.....	147													
148-49.....	148													
149.....	149													
Tynsida.....	150				1	160	4			1	160		6	960
Byeland.....	151									1	120.75		4	361.50
Huntsville.....	152	1,080	1	160						1	160		7	2,000
Sullivan.....	153	640								4	640		13	2,242.75
Northland.....	153	160											1	160
Sandsville.....	154						1	160					1	160
Total range.....	6	1,880	1	160	1	160	5	800	7	1,080.75	2	202.75	32	5,884.25
Range 50—														
151-50.....	151	65												
Grand Forks.....	152		1	174			1	2.40					3	67.51
Higden.....	153		2	240									5	654
Higden.....	154												5	792
Total range.....	1	65	3	414			1	2.40					13	1,443.51
Polk county.....	129	21,958.16	78	13,338.35	73	11,775.47	155	27,065.84	245	39,934.71	74	11,355.53	1,158	193,668.03



TABLE XIV.

The mortgage foreclosures in Polk county, Minnesota, in the year 1891, giving for each farm sold under foreclosure all facts relating thereto as shown by the records in the office of the register of deeds.

No. of fore- closures.	DEED RECORDS.			MORTGAGE RECORDS.					Redemptions.
	From whom pur- chased.	Consid- eration.	Date of purchase.	Date of mortgage.	Date of fore- closure.	Am't of mort- gage.	No. of acres.	Am't of decrees.	
Rosebud—									
1 Homest'd.	.....		June 20, '89	June 20, '89	Sept. 7, '91	\$800.00	160	\$977.77	....
Chester—									
2 W. D.	.....	\$500.00	Aug. 14, '89	Jan. 22, '89	Oct. 5, '91	500.00	160	662.55	....
3 H.	.....		July 31, '88	Oct. 22, '88	June 15, '91	250.00	160	359.53	....
4 Pre-empt.	.....	140.78	July 7, '90	July 7, '90	April 20, '91	1,400.00	431.90	136.28	....
Hill River—									
W. D.	.....	1,000.00	Dec. 15, '85	Jan. 14, '86	July 24, '91	45.00	160	61.95	R.
Sletten—									
6 W. D.	.....	600.00	Oct. 24, '89	Nov. 17, '86	— '91	600.00	160	697.58	....
7 H.	.....		Dec. 10, '90	Aug. 22, '89	July 11, '91	400.00	162.61	514.15	R.
Lambert—									
8 Pre-empt.	.....	202.25	Sept. 4, '89	Sept. 5, '89	July 13, '91	1,000.00	160	1,212.65	....
9 W. D.	.....	1,400.00	Feb. 15, '89	Sept. 11, '89	April 18, '91	900.00	160	128.22	....
10 H.	.....		Dec. 1, '85	Nov. 29, '89	April 25, '91	250.00	160	290.25	....
11 Pre-empt.	.....	201.30	Jan. 13, '90	Jan. 9, '90	Mar. 31, '91	120.00	160	184.20	....
12 H.	.....		June 1, '86	June 1, '86	June 1, '91	600.00	160	907.80	....
13 H.	.....		July 16, '87	Oct. 21, '87	May 4, '91	501.00	160	725.70	....
14 H.	.....		June 6, '87	June 7, '87	July 24, '91	52.50	160	78.35	....
15 H.	.....		Oct. 16, '88	Oct. 27, '88	May 16, '91	400.00	160	539.44	....
16 Pre-empt.	.....	200.00	Sept. 1, '82	Sept. 1, '82	Aug. 31, '91	300.00	160	429.00	....
17 H.	.....		Oct. 16, '88	Oct. 22, '88	May 16, '91	400.00	160	539.14	....
18 W. D.	.....	1,500.00	Oct. 16, '89	Nov. 9, '89	May 11, '91	650.00	160	135.50	....
T. 151, R. 41—									
19 Pre-empt.	.....	201.56	Aug. 14, '89	Aug. 14, '89	Sept. 7, '91	300.00	160	395.05	....
20 Pre-empt.	.....	202.00	April 26, '90	April 26, '90	July 25, '91	250.00	160	355.27	....
21 Pre-empt.	.....	200.00	Sept. 4, '88	Sept. 4, '88	April 11, '91	500.00	160	655.65	....
22 Pre-empt.	.....	202.00	June 16, '90	June 16, '90	April 25, '91	400.00	160	60.00	....
Badger—									
23 Pre-empt.	.....	200.00	April 30, '86	April 30, '86	April 22, '91	220.00	160	379.83	....
24 H.	.....		Jan. 17, '89	Jan. 19, '89	June 8, '91	500.00	160	637.78	....
25 H.	.....		Aug. 25, '89	Sept. 3, '89	July 11, '91	250.00	160	379.83	....
26 H.	.....		Jan. 11, '89	Jan. 15, '89	Nov. 11, '91	300.00	160	429.73	....
27 H.	.....		June 6, '89	June 20, '89	July 1, '91	400.00	160	519.53	....
28 H.	.....		Jan. 23, '85	Aug. 9, '89	May 16, '91	800.00	160	1,049.02	....
29 Pre-empt.	.....	200.00	Dec. 1, '86	June 1, '89	Sept. 13, '91	90.00	160	104.95	....
30 W. D.	.....	2,700.00	Aug. 30, '89	May 1, '89	May 16, '91	700.00	160	866.11	....
31 Pre-empt.	.....	200.00	July 20, '86	July 20, '86	July 24, '91	37.50	160	70.70	....
32 W. D.	.....	2,500.00	Nov. 1, '88	May 1, '89	May 16, '91	750.00	160	945.73	....
33 Pre-empt.	.....	100.00	May 3, '89	May 9, '89	Dec. 14, '91	250.00	80	356.20	....
34 Pre-empt.	.....	200.00	Dec. 21, '85	Dec. 21, '85	June 29, '91	400.00	160	567.63	....
Poplar River.									
35 Pre-empt.	.....	200.00	June 29, '87	July 1, '87	Aug. 22, '91	400.00	160	574.16	....
36 W. D.	.....	500.00	Apr. 16, '90	Mar. 2, '89	Mar. 31, '91	600.00	160	792.75	....
37 W. D.	.....	500.00	June 7, '89	July 2, '89	Apr. 17, '91	185.00	320	251.50	....
38 Pre-empt.	.....	200.00	Jan. 24, '89	Oct. 26, '89	Apr. 25, '91	800.00	160	137.20	....
39	.....					2,000.00	160	2,549.60	....
40 W. D.	.....	3,000.00	Nov. 17, '86	Mar. 22, '89	June 29, '91	1,000.00	160	1,218.75	....
41 H.	.....		Feb. 9, '87	Nov. 18, '89	Apr. 18, '91	900.00	160	141.00	R.
42 Pre-empt.	.....	200.00	Jan. 15, '85	Nov. 30, '88	Apr. 25, '91	1,000.00	160	185.75	....
43 Pre-empt.	.....	195.86	May 31, '84	Nov. 4, '89	May 30, '91	150.00	160	97.29	....
44 H.	.....		June 30, '86	June 30, '86	May 30, '91	500.00	160	652.83	....
45 H.	.....		June 29, '87	June 29, '87	June 20, '91	350.00	160	548.23	....
46 W. D.	.....	1,500.00	Oct. 28, '89	Dec. 10, '89	Sept. 5, '91	50.00	160	60.44	....

TABLE XIV.—Continued.

No. of fore- closures.	DEED RECORDS.			MORTGAGE RECORDS.					Redemptions.
	From whom pur- chased.	Consid- eration	Date of purchase.	Date of mortgage.	Date of fore- closure.	Amt. of mort- gage.	No. of acres.	Amo't of decrees	
Emardville.—									
47	H.....		Mar. 5, '89	Mar. 5, '89	May 9, '91	250.00	156.33	339.55	....
48	H.....		Jan. 7, '90	Feb. 26, '90	Dec. 21, '91	400.00	160	515.20	....
49	Pre-empt.	200.00	Dec. 27, '82	Dec. 27, '82	May 9, '91	300.00	160	480.88	....
50	H.....		Dec. 3, '89	Feb. 26, '90	Dec. 22, '91	400.00	160	515.70	....
51	H.....		June 10, '89	Nov. 1, '89	Aug. 11, '91	541.50	160	660.30	....
52	H.....		June 10, '89	Nov. 1, '89	Nov. 11, '91	541.50	160	665.15	....
53	H.....		Nov. 1, '89	Nov. 5, '89	Aug. 11, '91	403.26	160	496.95	....
54	Pre-empt.	250.00	Oct. 10, '82	Oct. 11, '82	July 6, '91	350.00	160	620.75	....
55	H.....		Jan. 29, '89	Mar. 18, '89	Feb. 7, '91	300.00	160	492.01	....
56	Pre-empt.	198.95	July 31, '82	July 31, '82	Mar. 14, '91	300.00	159.16	610.00	....
Grove Park—									
57	Pre-empt.	201.85	Sept. 17, '89	Sept. 25, '89	May 9, '91	650.00	160	778.75	....
58	H.....		Sept. 10, '86	Dec. 4, '88	Aug. 11, '91	691.35	80	824.76	....
59	H.....		June 13, '87	July 12, '87	May 11, '91	501.00	160	719.06	....
60	Pre-empt.	186.65	Jan. 19, '82	Oct. 15, '89	Apr. 18, '91	900.00	160.52	147.30	....
61	W. D.....	600.00	Mar. 29, '86	Aug. 16, '89	Aug. 8, '91	1,500.00	80	1,824.75	....
61	Pre-empt.	202.24	Aug. 17, '89				160		....
62	H.....		Dec. 19, '88	Dec. 20, '88	Mar. 9, '91	575.00	160	729.75	....
63	W. D.....	1,050.00	Sept. 15, '81	July 16, '87	July 20, '91	800.00	160	934.50	....
Woodside—									
64	H.....		Mar. 13, '89	May 31, '89	Sept. 7, '91	600.00	125.51	768.50	....
Terre Bonne.									
65	H.....		June 7, '87	June 4, '87	Mar. 21, '91	550.00	160	690.21	....
66	H.....		Apr. 30, '83	Feb. 27, '84	Jan. 19, '91	600.00	160	924.65	....
67	Pre-empt.	201.95	Feb. 24, '90	Mar. 20, '90	Sept. 25, '91	575.00	160	86.28	....
68	W. D.....	1,200.00	Aug. 21, '86	Aug. 23, '86	Aug. 17, '91	1,300.00	160	395.76	....
69	H.....		Aug. 8, '88	Aug. 8, '88	Apr. 17, '91	440.00	160	578.98	....
70	H.....		May 1, '89	Nov. 4, '89	May 2, '91	340.00	160	217.84	R
71	H.....		Nov. 30, '83	Nov. 18, '89	May 9, '91	800.00	160	957.25	....
72	W. D.....	1,000.00	June 2, '86	June 2, '86	Nov. 14, '91	1,000.00	160	1,510.00	....
73	W. D.....	750.00	Jan. 31, '85	Dec. 27, '87	May 13, '91	600.00	160	700.50	....
74	Pre-empt.	200.00	Nov. 28, '88	Nov. 28, '88	June 9, '91	500.00	160	653.25	....
75	H.....		Nov. 20, '83	Dec. 6, '86	Jan. 3, '91	600.00	120	823.97	....
Gervais—									
76	H.....		Mar. 5, '89	Mar. 5, '89	May 9, '91	250.00	156.33	339.55	....
77	Pre-empt.	187.40	Nov. 20, '85	Nov. 20, '85	Nov. 11, '91	250.00	160	347.45	....
78	H.....		July 19, '88	June 29, '89	June 13, '91	300.00	160	422.51	....
79	Pre-empt.	200.00	Dec. 19, '82	Dec. 19, '82	July 13, '91	350.00	160	578.35	....
80	H.....		June 30, '86	June 30, '86	June 20, '91	250.00	160	339.64	R.
River Falls--									
81	Pre-empt.	200.00	Dec. 30, '84	Dec. 30, '84	Feb. 3, '91	500.00	160	640.70	....
82	Pre-empt.	187.86	Aug. 10, '83	Aug. 10, '83	Oct. 26, '91	300.00	150.29	415.41	....
83	H.....		Dec. 16, '87	Mar. 21, '88	June 15, '91	350.00	160	496.22	....
Rocksburg--									
84	Pre-empt.	200.00	May 30, '84	Oct. 4, '87	Feb. 7, '91	150.00	160	258.07	R.
85	W. D.....	1,449.75	May 24, '88	Oct. 27, '86	Jan. 16, '91	140.41	149.50	153.20	....
North--									
86	W. D.....	1,000.00	July 25, '83	Nov. 17, '81	Nov. 25, '91	300.00	160	414.53	....
87	W. D.....	1,500.00	May 20, '89	June 11, '89	Dec. 12, '91	600.00	160	736.00	....
Garfield--									
88	W. D.....	400.00	Dec. 12, '82	April 15, '87	July 24, '91	80.00	160	105.55	....
89	H.....		July 18, '87	July 27, '87	April 7, '91	1,700.00	320	2,086.10	....
90	W. D.....	100.00	Oct. 24, '89	Nov. 17, '87	Sept. 5, '91	500.00	160	597.58	R.
91	Pre-empt.	100.00	Aug. 23, '87	Aug. 23, '87	Dec. 27, '91	350.00	120	511.36	....
92	Pre-empt.	200.00	Sept. 21, '82	June 5, '87	April 25, '91	750.00	160	1,024.90	....
Godfrey--									
93	Pre-empt.	200.00	Jan. 25, '83	Sept. 3, '86	Aug. 22, '91	800.00	160	988.60	....
94	H.....		Jan. 28, '83	June 24, '86	Oct. 5, '91	500.00	117	662.55	....
95	H.....		Nov. 5, '89	April 23, '85	Aug. 1, '91	175.00	120	344.95	....
96	H.....		Nov. 1, '87	Nov. 1, '87	June 20, '91	400.00	160	582.59	....
97	Pre-empt.	200.00	Oct. 29, '87	Oct. 29, '87	Jan. 5, '91	400.00	160	552.28	....
98	Pre-empt.	200.00	June 1, '86	June 1, '86	Sept. 5, '91	300.00	160	373.24	....
99	W. D.....	100.00	Dec. 14, '83	Oct. 1, '88	April 28, '91	600.00	160	796.44	....

TABLE XIV.—Continued.

No. of fore- closures.	DEED RECORDS.			MORTGAGE RECORDS.					Redemptions.
	From whom pur- chased.	Consid- eration	Date of purchase.	Date of mortgage.	Date of fore- closure.	Amt. of mort- gage.	No. of acres.	Amt. of decrees	
Tilden--									
106 W. D. ....	\$400.00	Oct. 26, '86	Jan. 8, '90	May 11, '91	\$300.00	157.04		\$391.17	....
101 H. ....		June 21, '87	July 10, '88	May 9, '91	330.00	160		447.30	....
102 H. ....		July 30, '86	Feb. 17, '88	June 22, '91	500.00	160		678.15	....
103 H. ....		Sept. 10, '86	Nov. 18, '87	June 23, '91	600.00	139		817.45	....
104 Pre-empt.	200.00	May 12, '82	May 12, '82	July 13, '91	225.00	160		430.25	....
105 W. D. ....	900.00	Aug. 20, '88	Aug. 2, '88	Sept. 17, '91	550.00	160		736.63	....
106 Pre-empt.	100.00	June 20, '88	July 21, '88	Mar. 7, '91	200.00	80		309.76	....
107 H. ....		Jan. 17, '88	July 11, '88	May 19, '91	880.00	160		1,115.25	....
108 W. D. ....	1,950.00	Oct. 9, '89	Oct. 30, '89	May 4, '91	600.00	160		751.26	....
109 Pre-empt.	200.00	Dec. 13, '88	Dec. 13, '88	July 13, '91	700.00	160		914.65	....
110 Pre-empt.	120.00	Nov. 3, '86	Mar. 8, '89	July 21, '91	59.80	120		108.94	....
111 Pre-empt.	200.00	Jan. 13, '87	Jan. 13, '87	May 16, '91	600.00	160		806.00	....
112 H. ....		June 26, '86	June 1, '89	July 6, '91	350.00	160		500.91	....
113 W. D. ....	150.00	May 21, '83	June 19, '89	Nov. 20, '91	750.00	160		955.45	....
114 H. ....		Apr. 7, '87	Apr. 28, '87	May 29, '91	600.00	160		968.93	....
115 Pre-empt.	202.16	Sept. 5, '89	Sept. 5, '89	Dec. 21, '91	550.00	160		713.20	....
Lake Pleasant									
116 W. D. ....	2,400.00	Nov. 28, '87	Nov. 28, '87	May 13, '91	1,500.00	160		1,100.00	....
117 W. D. ....	1,200.00	Sept. 23, '87	Jan. 6, '83	June 20, '91	450.00	160		687.71	....
118 Pre-empt.	188.25	Dec. 13, '83	Dec. 20, '88	Apr. 4, '91	800.00	149.80		1,021.74	....
119 H. ....		June 11, '89	Nov. 12, '86	Apr. 19, '91	700.00	160.20		963.59	....
120 Pre-empt.	200.00	June 24, '82	June 24, '82	June 11, '91	500.00	160		1,197.10	....
121 Q. C. D. ....	100.00	Dec. 14, '86	Mar. 9, '87	July 24, '91	75.00	160		91.10	....
122 H. ....		Oct. 19, '86	Nov. 26, '86	Aug. 16, '91	501.00	160		716.97	....
123 W. D. ....	575.00	Apr. 21, '81	Jan. 6, '89	Jan. 6, '91	80.00	160		98.02	....
124 W. D. ....	1,200.00	May 14, '88	Oct. 18, '86	June 13, '91	400.00	160		523.34	....
125 Q. C. D. ....	800.00	Nov. 19, '86	Jan. 27, '87	Aug. 29, '91	700.00	160		923.36	....
126 H. ....		Jan. 20, '83	Oct. 14, '86	.....	120.00	160		93.60	....
127 W. D. ....	3,000.00	July 2, '87	July 1, '87	Apr. 25, '91	1,000.00	160		1,217.46	....
128 W. D. ....	1,248.80	Jan. 28, '86	Aug. 18, '87	June 20, '91	500.00	160		550.00	....
129 W. D. ....	4,000.00	Dec. 1, '86	June 17, '89	Apr. 6, '91	750.00	148		905.50	R.
Red Lake Falls									
130 W. D. ....	400.00	Mar. 25, '81	Feb. 10, '85	Apr. 28, '91	800.00	80		1,138.25	....
131 W. D. ....	1,300.00	June 12, '83	Apr. 6, '82	Aug. 31, '91	600.00	80		835.75	....
132 Pre-empt.	200.00	July 27, '78	Mar. 10, '90	Aug. 31, '91	1,350.00	160		1,454.00	R.
133 W. D. ....	3,200.00	July 18, '90	July 18, '90	Dec. 21, '91	1,500.00	160		1,851.06	....
134 } Pre-emp	187.68	Aug. 26, '79	.....	.....	.....	.....		.....	....
134 } W. D. ....	240.00	Dec. 23, '79	Dec. 18, '86	May 23, '91	120.00	321.65		164.05	....
135 H. ....		Apr. 23, '87	May 21, '89	May 23, '91	150.00	160		203.75	....
136 H. ....		Apr. 23, '87	Apr. 25, '87	July 24, '91	67.50	160		86.25	....
137 Pre-empt.	200.00	June 14, '83	June 14, '83	Nov. 16, '91	225.00	160		453.46	....
138 H. ....		Apr. 8, '82	Nov. 26, '82	Nov. 18, '91	1,300.00	140		1,729.79	....
139 H. ....		Oct. 28, '76	Aug. 9, '86	Aug. 31, '91	2,000.00	195		2,769.00	....
Black River.									
140 H. ....		Dec. 16, '87	Dec. 17, '87	Mar. 2, '91	250.00	160		371.53	....
141 W. D. ....	800.00	May 1, '85	Sept. 17, '89	Apr. 18, '91	250.00	280		181.36	....
142 H. ....		.....	Oct. 12, '89	Apr. 18, '91	600.00	160		717.97	....
143 H. ....		Jan. 15, '89	Jan. 22, '89	Mar. 7, '91	350.00	160		515.08	....
144 W. D. ....	300.00	Oct. 6, '85	July 20, '87	July 24, '91	202.50	329		225.30	....
145 W. D. ....	800.00	Sept. 14, '83	Oct. 17, '88	July 24, '91	75.00	160		133.05	....
Sanders.									
146 Pre-empt.	635.00	Aug. 3, '39	Aug. 25, '85	Aug. 8, '91	700.00	161.21		14.65	....
147 H. ....		Dec. 20, '83	Mar. 12, '89	Nov. 18, '91	67.50	160		50.42	....
148 H. ....		Jan. 10, '90	Dec. 7, '88	May 4, '91	500.00	160		645.10	....
149 H. ....		June 17, '87	June 18, '87	Apr. 15, '91	400.00	160		02.27	....
150 H. ....		Sept. 23, '87	Oct. 29, '87	Mar. 9, '91	400.00	160		98.49	....
151 H. ....		Sept. 1, '85	Dec. 21, '87	Nov. 11, '91	200.00	160		290.99	....
152 H. ....		May 3, '83	June 10, '86	Mar. 9, '91	700.00	321.28		1,264.55	....
Norden.									
153 H. ....		Jan. 24, '89	Jan. 5, '89	Nov. 11, '91	30.00	160		72.43	....
Liberty.									
154 H. ....		Jan. 18, '88	Jan. 20, '88	Apr. 21, '91	800.00	160		1,044.53	....
155 W. D. ....	700.00	Dec. 19, '83	Dec. 1, '82	June 20, '91	350.00	160		660.81	....
156 R. R. D. ....	480.00	Oct. 4, '88	Sept. 29, '88	Nov. 18, '91	500.00	160		692.10	....
157 R. R. D. ....	800.00	Dec. 5, '85	June 10, '87	Apr. 21, '91	400.00	159.50		597.85	R.



TABLE XIV.—Continued.

No. of fore- closures.	DEED RECORDS.			MORTGAGE RECORDS.					Redemptions.
	From whom pur- chased.	Consid- eration	Date of purchase.	Date of mortgage.	Date of fore- closure.	Amt of mort- gage.	No. of acres.	Amo'tnt of decrees	
Onstad.									
158	H.....		Jan. 23, '85	July 29, '86	Apr. 17, '91	\$450.00	160	\$575.13	.....
159	Pre-empt.	\$200.00	Mar. 4, '84	Mar. 4, '84	Apr. 6, '91	300.00	160	433.10	.....
160	W. D.....	545.00	Aug. 8, '89	Dec. 15, '88	Nov. 28, '91	600.00	160	823.40	.....
161	W. D.....	1,000.00	Oct. 18, '83	Nov. 24, '86	Nov. 18, '91	300.00	160	407.15	.....
162	Pre-empt.	151.40	Dec. 19, '89	Dec. 19, '89	Nov. 4, '91	60.00	120	106.11	.....
163	H.....		Nov. 16, '86	Nov. 16, '86	May 13, '91	400.00	160	662.61	.....
164	H.....		Oct. 20, '88	Nov. 4, '88	July 31, '91	600.00	160	863.54	.....
165	Pre-empt	200.00	Apr. 2, '83	July 17, '86	Aug. 10, '91	550.00	160	694.95	.....
166	W. D.....	1,400.00	Jan. 5, '83	Feb. 10, '88	Jan. 3, '91	501.00	158	691.36	.....
Kertsonville.									
167	Pre-empt.	200.00	July 7, '82	July 7, '82	Nov. 28, '91	300.00	160	666.15	.....
168	W. D.....	1,500.00	July 8, '85	Dec. 12, '82	July 20, '91	450.00	160	669.75	.....
169	Pre-empt.	200.00	Oct. 13, '82	Oct. 13, '82	May 13, '91	400.00	160	592.91	.....
170	Pre-empt.	200.00	Mar. 9, '83	Apr. 18, '88	Apr. 18, '91	1,000.00	160	1,306.20	.....
Gentilly.									
171	W. D.....	1,120.00	Oct. 19, '89	Sept. 12, '89	Dec. 2, '91	1,000.00	160	1,177.00	.....
172	Pre-empt.	200.00	Jan. 6, '82	Dec. 4, '86	Jan. 10, '91	900.00	160	1,137.55	.....
173	Pre-empt.	200.00	Jan. 21, '81	Nov. 15, '85	May 16, '91	1,000.00	160	1,274.30	.....
174	W. D.....	1,000.00	May 7, '89	Nov. 2, '85	July 24, '91	82.50	160	61.20	.....
175	Pre-empt.	200.00	Dec. 9, '85	Dec. 4, '83	June 20, '91	1,000.00	160.33	1,315.25	.....
176	Pre-empt.	186.00	Dec. 28, '81	Dec. 4, '86	Dec. 30, '91	800.00	160	1,076.15	.....
177	H.....		Dec. 18, '84	Mar. 6, '89	Aug. 8, '91	120.00	160	166.43	.....
178	W. D.....	1,200.00	Mar. 30, '89	Nov. 11, '84	Mar. 2, '91	900.00	160	1,007.63	.....
179	Pre-empt.	200.00	Dec. 12, '83	Dec. 18, '86	May 23, '91	120.00	310.15	164.05	.....
180	H.....		May 5, '84	Apr. 5, '89	June 20, '91	1,000.00	160	1,243.31	.....
181	W. D.....	1,920.00	Nov. 6, '77	May 3, '87	July 13, '91	1,200.00	162.50	1,561.25	.....
182	H.....		June 21, '81	Dec. 17, '85	July 13, '91	900.00	160	1,255.00	.....
Louisville.									
183	Pre-empt.	207.17	Apr. 26, '83	Apr. 26, '83	Feb. 14, '91	450.00	80	675.55	.....
184	Pre-empt.	199.50	Oct. 21, '81	Oct. 21, '81	July 6, '91	450.00	160	694.75	.....
185	W. D.....	2,750.00	Feb. 15, '87	Apr. 5, '87	Feb. 21, '91	135.00	174.25	173.86	.....
186	W. D.....		Apr. 23, '83	Oct. 27, '87	July 24, '91	105.00	160	121.10	.....
Polk Centre.									
187	Pre-empt.	100.00	Apr. 7, '88	May 20, '89	Apr. 18, '91	250.00	160	65.35	.....
188	W. D.....	700.00	Dec. 22, '87	Dec. 29, '87	May 7, '91	300.00	160	439.22	.....
189	W. D.....	700.00	June 23, '88	June 29, '88	July 6, '91	800.00	160	1,034.45	.....
190	Pre-empt.	200.00	June 5, '82	Apr. 28, '87	Aug. 22, '91	600.00	160	853.66	.....
191	Pre-empt.	200.00	Dec. 19, '83	Dec. 10, '87	Mar. 16, '91	450.00	160	554.60	.....
Bray.									
192	.....					400.00	160	628.96	.....
193	.....					200.00	40	277.30	.....
194	Pre-empt.	200.09	Nov. 8, '83	Nov. 5, '83	June 20, '91	450.00	160.33	918.15	.....
Numedal—									
195	W. D.....	3,000.00	Dec. 8, '88	Mar. 1, '89	May 16, '91	800.00	160	1,013.49	.....
196	H.....		May 31, '89	May 31, '89	Dec. 14, '91	400.00	160	516.35	.....
Reis—									
197	Pre-empt.	186.00	April 24, '82	Nov. 15, '87	Nov. 4, '91	70.00	160	104.33	.....
198	H.....		July 1, '84	Nov. 6, '89	April 18, '91	500.00	160	169.75	R
199	W. D.....	1,250.00	Sept. 2, '87	Dec. 11, '80	July 6, '91	400.00	153.73	588.25	.....
Russia—									
200	R. R. D....	1,445.59	June 19, '86	Jan. 2, '86	May 2, '91	1,800.00	320	2,185.00	.....
201	{ W. D.....	1,175.00	Jan. 14, '88	{ June 22, '86	May 2, '91	550.00	160	729.09	.....
	{ R. R. D....	1,120.00	July 6, '86						
202	{ W. D.....	620.00	Oct. 17, '89	{ Dec. 26, '87	Nov. 10, '91	557.00	160	629.83	.....
	{ W. D.....	1,100.00	Dec. 27, '87						
Fairfax—									
203	R. R. D....	1,360.00	Dec. 1, '86	Dec. 30, '86	April 21, '91	1,350.00	160	1,354.45	.....
204	R. R. D....	960.00	Dec. 3, '85	Jan. 15, '86	July 28, '91	1,005.06	160	1,297.33	R
205	Pre-empt.	200.00	Jan. 19, '81	Nov. 16, '86	Oct. 30, '91	500.00	160	410.00	.....
206	R. R. D....	1,740.00	Oct. 31, '85	Nov. 2, '85	June 23, '91	1,700.00	200	2,291.00	.....

TABLE XIV.—Continued.

No. of fore- closures.	DEED RECORDS.			MORTGAGE RECORDS.					Redemptions.
	From whom pur- chased.	Consid- eration	Date of purchase.	Date of mortgage.	Date of fore- closure.	Amt. of mort- gage.	No. of acres.	Amt. of decrees	
Crookston—									
207 Pre-empt.		\$200.00	Jan. 12, '86	Jan. 12, '86	Aug. 26, '91	\$800.00	160	\$500.00	....
208 H.....			Nov. 20, '80	Oct. 4, '89	Mar. 31, '91	180.00	120	236.15	R
209 W. D.....		600.00	June 12, '91	Jan. 2, '90	Sept. 15, '91	434.60	90	565.91	R
Parnell—									
210 W. D.....		2,500.00	Mar. 18, '86	Mar. 23, '86	May 30, '91	650.00	160	818.59	....
211 H.....			May 28, '89	May 2, '89	May 9, '91	400.00	160	500.34	....
212 H.....			Sept. 21, '83	Sept. 22, '83	June 20, '91	500.00	160	709.55	....
T. 153, R. 46—									
213 H.....			Dec. 20, '87	Mar. 1, '86	June 20, '91	600.00	160	832.46	....
214 W. D.....		2,700.00	Dec. 16, '84	April 19, '89	May 23, '91	1,000.00	160	1,304.75	....
Hammond—									
215 W. D.....		600.00	Mar. 24, '84	Nov. 17, '84	June 16, '91	90.70	160	90.60	...
216 H.....			Jan. 5, '85	May 20, '90	Nov. 9, '91	750.00	200	900.84	....
Lowell—									
217 W. D.....		1,500.00	June 6, '88	Oct. 1, '88	Jan. 5, '91	400.00	159.70	477.13	R
218 W. D.....		1,475.00	Oct. 14, '87	Oct. 14, '87	Mar. 7, '91	1,000.00	160	1,050.00	....
219 W. D.....		1,000.00	Dec. 29, '86	Dec. 24, '86	April 14, '91	1,900.00	310.48	2,242.82	....
Fanny—									
220 H.....			Sept. 15, '84	Sept. 17, '84	July 24, '91	60.00	160	55.65	R
221 W. D.....		750.00	Feb. 13, '84	Dec. 4, '86	April 14, '91	1,900.00	160	2,242.82	...
222 W. D.....		1,100.00	Nov. 17, '81	Dec. 9, '89	Nov. 4, '91	120.10	160	165.18	....
Wyandotte—									
223 H.....			Dec. 20, '88	Feb. 18, '89	Mar. 9, '91	60.00	160	112.47	....
Euclid—									
224 W. D.....		1,200.00	Feb. 15, '85	Apr. 1, '85	— '91	800.00	160	1,153.03	R.
225 Pre-empt.		200.00	Sept. 2, '81	Feb. 1, '87	May 11, '91	431.54	160	539.69	R.
226 Pre-empt.		200.00	Sept. 2, '81	Sept. 1, '87	Oct. 27, '91	1,000.00	160	1,276.60	....
Angus—									
227 W. D.....		1,200.00	Feb. 27, '86	Feb. 18, '86	Mar. 30, '91	2,100.00	320	3,211.61	....
228 Pre-empt.		382.00	Oct. 6, '80	July 6, '86	Nov. 28, '91	800.00	160	933.17	....
Brislet—									
229 Pre-empt.		400.00	Nov. 26, '86	Jan. 1, '84	Nov. 28, '91	700.00	160	983.25	....
Vineland—									
230 W. D.....		900.00	Nov. 24, '84	Jan. 20, '88	May 2, '91	35.00	80	94.30	....
Rome—									
231 R. R. D...		400.00	Dec. 18, '85	Oct. 28, '86	Nov. 25, '91	400.00	80	527.12	....
Nesbit—									
232 R. R. D...		3,627.52	June 16, '85	July 8, '85	Jan. 5, '91	2,000.00	320	2,445.49	....
233 Pre-empt.		382.00	Feb. 10, '81	Feb. 16, '86	Oct. 17, '91	800.00	160	985.60	....
Farley—									
234 Pre-empt.		400.00	Sept. 22, '81	Jan. 16, '86	Sept. 5, '91	1,000.00	160	1,290.31	R.
235 R. R. D...		2,560.00	Mar. 25, '87	Dec. 6, '86	July 28, '91	540.00	320	401.50	....
236 H.....			Mar. 27, '86	Mar. 24, '86	June 20, '91	90.00	160	115.30	....
237 { W. D.....		600.00	July 23, '88	{ Apr. 14, '90	Apr. 13, '91	798.38	160	876.90	R.
238 { W. D.....		1,425.00	Apr. 18, '88	{	Apr. 7, '91	120.00	160	108.47	....
238 Pre-empt.		400.00	Nov. 4, '82	Nov. 1, '87					
T. 148, R. 49—									
239 H.....			Jan. 16, '84	Jan. 16, '84	Feb. 7, '91	105.00	160	82.50	....
Bygland—									
240 H.....			Jan. 15, '80	Mar. 31, '89	June 15, '91	150.00	20.75	286.46	...
Huntsville—									
241 H.....			Dec. 12, '82	Feb. 10, '83	May 29, '91	955.00	160	1,853.39	....
Sullivan—									
242 W. D.....		2,800.00	Mar. 28, '86	Dec. 11, '89	Mar. 16, '91	735.00	160	635.82	....
243 Pre-empt.		382.00	Mar. 28, '83	Mar. 28, '83	June 20, '91	450.00	160	703.11	R.
244 Pre-empt.		400.00	Mar. 31, '82	June 15, '89	Apr. 27, '91	1,900.00	160	2,220.00	....
245 Q. C. D.....		1,500.00	Feb. 13, '85	Nov. 1, '88	Dec. 9, '91	400.00	160	476.93	....

## CHAPTER II.

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### LAND VALUES IN MINNESOTA.

The subject of the burden of debt upon the land owners of Minnesota has been considered in some of its phases in the preceding chapter of this report. The facts there presented will, however, be differently interpreted by different persons, according to their opinions of the actual values of the farms and other acre property of the State, in the years 1881 and 1891. Several questions of great importance to the student of those mortgage foreclosure statistics arise thus at the outset. What is the actual value of the lands in Minnesota and its several counties? What changes, if any, have taken place in the actual and relative values of those lands in the last ten years, and how do they correspond with the relative changes in the mortgage foreclosures recorded in the preceding pages? To answer these questions there is need of some authoritative information on the subject.

But the knowledge of the general value of lands in the several counties of the State is of importance and worth, not only in connection with this subject of mortgage foreclosures, but also in all matters relating to the levy of taxes, the true value of the lands and property of its citizens being everywhere the ideal basis for apportioning those taxes. For the adjustment of those taxes there is ever found a recurring difficulty of establishing the true value of those lands. To obtain that value is a difficult task. Practically, the decision in the premises now rests and always will rest with local officers. Those men have as their duty to make the assessment which is to determine each individual's taxes. Those men are not only subject to errors of judgment, but are moved more or less by personal and public incentives for obscuring or modifying true valuation, in accordance with certain established customs, or for various reasons which they deem good and sufficient.

In addition to the returns made by assessors relating to land values, the public possesses the decennial estimates of the United States census department. Those estimates are based upon the opinions or estimates of men who have been selected because they were supposed to know the approximate value of the lands in their respective localities. In other words, the census statistics of land values, as those of the local assessors, are based upon personal opinion concerning the subject under consideration. Doubtless, on the whole, those opinions do not widely vary from the actual facts, but of this there is no confirmation save in the opinion of another set of men.



The opinion of the assessors is often called into question and boards of equalization frequently have a difficult task before them in adjusting the burden of taxation upon the several communities of the commonwealth. For the special purpose of obtaining official, exact and final data relating to the subject, some states have, from the records of land sales, compiled statistics of land values within their borders. These compilations are based upon the records of hundreds and thousands of *bona fide* real estate sales in those states. Such a compilation is herewith presented for the state of Minnesota. It includes a summary of actual sales of lands, other than town and city lots, in the state of Minnesota, in the years 1881 and 1891, corresponding thus with the years selected for the accompanying statistics of mortgage foreclosures and redemptions. It includes deeds made as the result of proceedings for the foreclosure of mortgages and conveyances of land to railroad companies for right of way. It further includes all deeds given by the railway companies, and all transactions of a nature to develop market prices of the lands transferred from one person or corporation to another. The figures given in the records of the transfers here tabulated cover, not only the value of the lands, but also that of the buildings, fences and other improvements upon the same. The values here considered are the ones fixed or established by contract between the buyer and seller of the lands conveyed in the given years.

In compiling the facts to be found in the accompanying tables of land values, much discrimination has had to be used. The public records show many deeds given for a nominal consideration. Some of these are gifts or made for the purpose of clearing up titles, and are for one dollar or some like nominal sum. Then there are the deeds given in the case of lands sold for the non-payment of taxes and for kindred purposes, pre-emption, homestead and timber culture deeds from the United States government. As a rule these deeds show upon their face their character and give rise to no practical difficulty in their treatment. Near cities and within their corporate limits deeds are, however, sometimes given where the actual value is not stated. The actual consideration is misstated for speculative real estate purposes or otherwise. The number and amount of these deeds, giving a consideration above the true one, is doubtless about equal to that of transactions of the opposite nature. The error of the one kind will probably balance the other, and the figures secured approximately correspond to the actual value of the property conveyed in the given years. In compiling the tables all deeds showing, upon their face, that the consideration stated within is not the real value of the land conveyed, are excluded from the compilation. Only those are tabulated which, upon their face or upon personal inquiry, appear to contain a statement of the actual selling value of the lands conveyed.

As showing the difference between the instruments recorded on the books of the several registers of deeds for the State and those tabulated for this report, the following exhibit is offered for a single county, that of Martin. That county, in 1891, had the following instruments entered upon record in the office of the register of deeds: 605 deeds, 557 mortgages, 289 satisfactions, 78 certificates of land and 248 assignments of certificates, or a total of 1,777. Of the foregoing the Bureau tabulated for this report seven mortgage foreclosures on acre property and two on city lots and blocks, and 464 land transfers, or a total of 473. In Martin county, in 1891, as in many other counties, there were many deeds executed and delivered in accordance with the terms of contracts made from five to ten years previous. The deeds were not tabulated for those lands since they exhibited the value of lands in the years in which the contracts were drawn and not in the year in which the deeds were conveyed.

An examination has been made of the public records of land transfers in all the counties of the State, and transcripts made of the same. The theory on which this investigation and similar ones in other states has been made is that the number of acres of land sold in any county in any year is fairly representative of all the corresponding land in that county. Wherever the facts included in the tabulation are limited, as in the smaller and sparsely settled counties, the averages secured by this method are, however, liable to great possible error. Some of the cases of such error will be pointed out, and the careful student of the tables will find many others. But while in these small or sparsely settled counties the averages given by this report are subject to error and should be used with great care, this is not the case with the State as a whole or any large group of counties. There the facts covered by the figures or summaries are broad enough to fully apply the law or principle of averages, and the theory is, without doubt, justified by the result. The groups for which the summaries are given in the tables and the larger counties cover a field broad enough to ensure that all transient or local variations balance one another. Data are thus secured for determining the land values of the State as a whole and of its various sections in the years of inquiry. Facts are also secured for accurately measuring the material progress or adversity of the land owners of the commonwealth.

Mention has been made of the fact that the small and sparsely settled counties will furnish many exceptions to the general accuracy of the averages of land values obtained by the methods of this investigation. The most marked of such exceptions in Minnesota arise from the sale of lands by railroad companies or their land agents. These railroad lands were originally received by the companies in the form of land grant subsidies to aid in the construction of their roads. These lands are sold under many diverse conditions. In some cases



they are sold to individual settlers and the consideration mentioned in the deeds. In all such deeds the consideration stated is without doubt a fair index of the selling price of such lands, but the railway lands are frequently sold in large blocks to colonization companies. At such times they are frequently conveyed at a sum below what may be called their fair market value. It is impossible, as a rule, to distinguish these sales from the other conveyances of the railway lands, and no effort is made so to do. Mention should be made, however, of the fact and note made of its effect upon the average price of lands sold in any county or year. These sales of large tracts of railway lands were quite numerous in some counties in 1881, and in a few counties, to some extent, in 1891. Martin county, in 1881, shows the effect of such sales upon its averages.

Another fact about the railway lands sold in some counties in 1891 should be mentioned. Those counties had seen the greater portion of their railroad lands sold several years ago. The balance of those lands within their borders was, as a rule, of such inferior quality that it found no purchaser at the prices which prevailed. The adverse agricultural conditions which prevailed made no market or demand for this lower grade of railway land. The improvement in those conditions in some of those counties during the past few years has advanced the value of all cultivated lands and created a market demand for the hitherto unsold poor railway lands. But the sale of those lands at extremely low prices and in considerable quantities reduces the averages of all land sales. As a result many counties in Minnesota may be found which, by reason of the sale of its railway lands, present the following land paradox. The advancing land values of those counties aid in depressing or lessening the average value of all lands sold within their borders in the year 1891.

Owing to the foregoing, and a further fact to be mentioned later, it has been deemed best to tabulate all sales of railway lands by themselves as well as to include them with the other transfers in the State. Attention is specially called to a few of the counties in which these sales of railway lands have markedly affected the average price of all lands sold.

In Becker county, in 1881, the cultivated lands sold at an average of \$6.68, in 1891, for \$8.60, or an advance of about thirty per cent. The sale of large amounts of railway lands at a low price in the latter year reduced the average for all lands from \$6.23, in 1881, to \$5.71, or nearly eight per cent. Illustrations of the same general character may be found in the counties of Crow Wing, Itasca, Otter Tail, Wadena and some others. A few counties have their averages thus lowered by the sale of the railway lands within their borders, but not to the same extent. A study of the various tables will disclose all of these counties. A further fact about the railway lands of the State requires mention.



Those lands are usually sold on contracts requiring six or more payments and the deeds are made out and delivered upon the completion of the last payment. The consideration named in the deeds is sometimes only the amount of the last payment, and hence is only a fraction of the actual price or value of the land. It has been the aim of the Bureau to throw out from the tabulation all these sales, but it is possible that some of them, in a few counties, have been improperly included, and thus give rise to the low average value herein exhibited. Only special inquiries can demonstrate the correctness or error of this conjecture. Such errors, if they do exist, affect the totals for some few counties, but for the whole State are balanced by others of an opposite nature, and hence do not change the averages for that, or for the larger groups herewith presented.

A few counties, from special causes, show a large advance in the average land value due to some special cause. Thus, Carlton will be found to have for its average of land sales, in 1891, a value of \$23.28. This is about five times the reported assessed value for the county in that year. The high average given is caused by the transfer, some by deed and some by mortgage foreclosure, of quite a tract of land along the St. Louis river. The land thus conveyed was valuable by reason of the water power privilege which was conveyed by the title to the lands thus sold. The average of the lands sold in Carlton county by private sale in 1891, apart from this special land along the river, was only \$17.26 per acre, or only 74 per cent. of the figures given in the tables. In the same way the sale of some tracts of railway lands near Brainerd, in 1881, somewhat abnormally raised the average selling price of lands in Crow Wing county for that year.

The special facts and exceptional cases above presented exhibit the limitations of this tabulation of Minnesota land values as a test of the actual values of the lands in the State and in its several counties. To form, from the data presented, an intelligent opinion of the values of the lands of any particular county, account must be taken of all the facts herewith exhibited, the number of acres and values of the various classes of land tabulated for any given year. In a county, with a great amount of comparatively unimproved lands, more attention should be given to the value of railway lands than in an old and well settled county. A possible error in the actual consideration for which those lands were conveyed would lead to an appreciable error in the averages calculated therefrom. This would not be the case with the older settled counties, at least to any great extent. In the latter case the average of all lands sold would be a close approximate estimate to the actual average worth of the real estate in those counties. In the counties more recently settled it would be slightly in excess of that average, owing to the possible error above mentioned.

The tables of the report are not, therefore, presented in the expectation or belief that they will answer off-hand or at once all possible questions relating to the worth of lands in all the

counties. They are offered merely as a collection of facts approximately correct in certain lines for the use of those interested in the study of the economic condition and progress of the State of Minnesota. Used with judgment, these facts will be found, for the average county, as well as for the State as a whole, a more authentic index of the actual and the average values of the land, other than town lots, than any man's estimate or any consensus of opinion.

The results of this investigation are presented in a series of tables similar to those in the preceding chapter of mortgage foreclosures. The first two tables present an exhibit of all the acre property sold in the years 1881 and 1891, with the exception of the lands conveyed by mortgage foreclosures. Those tables, therefore, include the railway lands and all other lands sold in the given years by private sale. These tables give, for each year mentioned, the number of sales made, the number of acres transferred, and the consideration for the same. From the figures thus presented are calculated the average price per acre and the average size of tract conveyed which are also given in the above mentioned tables. Table III gives the same general class of facts for the transfers of railroad lands in the two years mentioned. Table IV does the same for the private sales, other than the sales of railway lands. Table V presents the averages for all classes of land transfers in the two years, and also includes, by way of comparison, the average value of all the corresponding lands as it was listed by the assessors for purposes of taxation. In all of these tables, in addition to the figures given for the State and for each county, there are presented summaries by groups. The groups are the same as those made use of in the chapter on mortgage foreclosures. (For explanation of groups, 1, 2, 3 and 4, see page 369, and for groups "A," "B," "C" and "D," see page 358. Group "E" is the same as that given in the first table on page 371, and group "F" the same as that given in the second table on the same page.) In connection with tables I, II and V are given the sum totals of all land transfers, including mortgage foreclosures in the given years. These totals are not given by counties but only by groups and for the State as a whole.

In tables VI and VII the general facts concerning the transfers tabulated in the preceding tables are subjected to an analysis showing the highest and the lowest prices paid, and the largest and smallest number of acres sold. The maximum price paid for land in Minnesota, in 1881, was \$3,750 for one acre in the county of Olmsted. This was for an acre with the buildings of a small factory thereon. The highest price paid for a tract of five or more acres was, for that year, \$2,000 per acre for five acres in the city of Minneapolis, in Hennepin county. The highest paid ten years later for similar tract was for 9.22 acres in the same city and at the price of \$5,423 per acre. The highest price paid in that year for a single acre was \$10,000 in the city of St. Paul, in Ramsey county. The lowest



price paid per acre for any tract of land in 1881 was 15 cents an acre for 723.88 acres in the county of Pope. The lowest price paid for land in 1891 was twenty-five cents an acre for a tract of 160 acres in Marshall county. The largest tract sold in the latter year was one of 15,301.28 acres in Cass county. This was sold for \$4.96 an acre. This was a tract of timber land sold by a large owner to a land and lumber syndicate. The largest tract sold in the year 1881 was one of 30,091.74 acres in the county of Polk at the average price of \$2.00 an acre. This was some railroad land, and was one of the many large tracts of such land conveyed by deed in that year.

For the year 1881 the total number of transfers tabulated for this report, including private sales, sales of railroad lands, and mortgage foreclosures, was 13,584. By these transfers 1,491,903.74 acres were conveyed for the consideration of \$14,857,697.02. The average tract of land thus conveyed was 109.84 acres, and its average price or valuation was \$9.96 per acre. For the year 1891 there were tabulated 20,031 transfers conveying 2,261,623.31 acres for a consideration of \$29,693,880.20. The average tract thus conveyed included 112.91 acres, and was sold at the average price of \$13.13 an acre.

Assuming, as is probably the case, that the averages deduced from the thousands of actual land transfers herein tabulated approximately correspond with the actual average value of the assessed lands of Minnesota, the following facts are to be noted. The land in Minnesota, other than town and city lots and blocks, increased in value on an average, from 1881 to 1891, from \$9.96 to \$13.13 per acre, or about 32 per cent. These figures do not agree with the averages obtained from the work of the assessors of the State. They give an average, according to the State Auditor's report for 1881, of \$7.68, and of only \$7.28 in 1891, or a decrease of over 5 per cent. The results obtained by the methods of this report are unquestionably fairly representative of the actual market value of the acre property of the State, as a whole, in the years investigated.

In 1881 there were, in the State, 184,307,789 acres of land listed for purposes of taxation. At \$9.69 an acre, these lands would have a value of \$183,470,658. This sum may then be said to be the value in that year of all the real estate of Minnesota, apart from the lots and blocks in the cities and towns, and the lands owned by the government and the railroad companies and not subject to taxation. The assessors gave this same property a value for taxable purposes of \$141,572,497.

In 1891 there were, in the State, 29,342,758 acres listed for taxation at an assessed valuation of \$213,842,048. The results obtained by the investigation here reported gives this land a value of \$385,268,392. This is an increase of \$201,797,734 over the figures obtained by the same method for the year 1881. The State, then, in ten years, added to the value of its farm property, and the other lands outside the cities, over 110 per cent. of the selling value of that real estate in the earlier year.



These results, when placed by the side of the returns of the assessors, show, for the State, as a whole, a marked decrease in the ratio of assessed to the actual value of the lands of Minnesota. In 1881 the assessed value of those lands was 77 per cent. of their actual value as deduced from the sales of the same. In 1891 the assessed value of the state lands was only 57 per cent. of the actual value. These figures show that the ratio of assessment for the State has relatively decreased in ten years nearly 30 per cent., (this 30 per cent. is the percentage of the 77, which expressed this ratio in 1881.) A careful examination of table V will show that some of the counties have not appreciably lowered their ratio of assessment, and hence justly complain of the heavy burden of taxation borne by them. Others have unduly reduced their assessments, and have thus been able to escape their just share of the burdens of the state government.

The average value of lands in the counties devoted mainly or exclusively to agriculture (Group "C") increased in the ten years from \$9.51 per acre to \$13.05. This is an advance of 37 per cent. In chapter one, of this part, under the mortgage statistics, it was found that the mortgage foreclosures in this same group of counties had decreased in the ten years 36 per cent. In that connection it was said that the figures indicated that ratio of relative improvement in the financial condition of the farmers of the State. The same ratio, or practically the same, having been obtained from the record of deed transfers, it is but reasonable to conclude that the deduction there made from the mortgage statistics measures the improvement of the agricultural industry in the past ten years.

The group of counties shaded dark upon the mortgage map of 1881 (see page 371, Group "E") had an average value, in 1881, of \$13.54, and in 1891, of \$15.29. Here was an improvement of thirteen per cent. The group of counties shaded dark on the map of 1891 (Group "F," page 371) had a value on an average, in 1881, of \$5.24, while this, in 1891, was only \$5.33, or an advance of two-tenths of one per cent. The results here secured for the latter group of counties in large measure agrees with what might be expected from the heavy mortgage foreclosures within their borders. For the first group of counties (Group "E") it is otherwise. Personal inquiry in southern Minnesota furnishes the data for an explanation of the apparent exception. The lands for the counties within the given group did not advance in price for a number of years until 1891. The figures of this report, therefore, record but a small part of the advance in those counties in the last two years. The uniform testimony of all classes bears witness to that advance. That advance of from twenty to thirty per cent., in the year 1892, is one which could have been predicted from the mortgage foreclosure record of the preceding year. Some counties, in 1891, had not experienced that advance in the slightest degree. The condition of general prosperity shown in their borders by the rec

ord of mortgage foreclosures is evidence that they will, in the immediate future, if not in the year 1892, experience a rise in farm values.

The tables give summaries for groups of counties according to the degree of their settlement in the year 1881, (as explained on page 369.) In group 1, all of whose counties were practically settled in the year 1881, the average true value in that year was \$15.82. The average value in the same group, ten years later, was \$20.11, or an advance of 27 per cent. Group 2 showed, in 1881, an average land value of \$7.68, and ten years later of \$11.11, or an advance of nearly 45 per cent. In the third group the lands advanced from \$6.71 to \$9.67 an acre, or nearly 44 per cent. Group 4, which includes the counties less than one-half settled in 1881, shows the greatest increase in land values; that increase was from \$4.43, in the earlier year, to \$10.59 in the later, or an advance of 137 per cent. The greater portion of this advance is made up of the value of the improvements added to the new land settled by their occupants. This increase is naturally greater in the newer than the older counties.

In 1881 the assessed value of all lands in the State was 77 per cent. of the true value of the same as shown by the accompanying tables. In that year there were 43 counties with a corresponding percentage between 65 and 85, and 14 above the highest of those percentages and 23 below the lowest. In 1891 the assessed value of the lands of the State was 57 per cent. of the true value. In that year there were 53 counties with a corresponding percentage included between 65 and 45. There were 18 with percentages below the lowest of those given and nine above the highest. The figures show that there is coming to be a greater uniformity of assessment than existed ten years ago, and fewer factors in the land sales leading to exceptions in the application of the rule of averages to a determination of the actual land values. The counties showing a percentage, very markedly different from that of the State, may have the variation caused by the sale of cheap lands of the railroads, the foreclosure of large quantities of land, the sale of a few tracts of exceptionally high priced land, as in Carlton, or the ratio of assessment is radically faulty. A careful comparison of all the accompanying tables will, in most cases, disclose the nature of the variation.

NOTE.—It was the intention of the Bureau, with the tables herewith presented of the mortgage foreclosures on acre or farm property and the land values in the several counties, to have printed tables showing the same class of facts about the mortgage foreclosures on city lots and blocks. The data for all such tables have been secured. As it would have been impossible, with the present force of the Bureau, to have properly tabulated those facts before April 1, 1893, it was deemed best to publish these two parts relating to land values and mortgage foreclosures when the report was due, and include

the statistics of the foreclosures of mortgages on city lots and blocks in the succeeding report. The work on the tabulation of these statistics has, however, progressed far enough to show that the number and amount of foreclosures on city lots and blocks far exceeds that on the acre property. The farmers of Minnesota are showing a far greater ability of meeting the burden of debt than the owner of speculative city real estate.

The data for this part of this report and the work of tabulation has been almost wholly performed by Mr. Frank Valesh and Mr. E. B. Evans, two of the deputies of the Bureau. To them the commissioner herewith extends his thanks for their earnestness and fidelity in their work.



TABLE I.

The selling value of lands in Minnesota, as shown by the records of deeds made for land sold (other than town lots) during the calendar year of 1881 (not including mortgage foreclosures.)

COUNTIES.	Number of sales recorded.	Aggregate amount of sales.	Number of acres sold.	Average size of tract sold, acres.	Average price paid per acre.
The State.....	12,415	\$13,624,839.93	1,358,381.20	109.43	\$10.03
Aitkin (4) (a).....	32	\$17,411.74	5,747.68	179.59	\$3.03
Anoka (2).....	154	108,105.37	15,384.96	99.90	7.04
Becker (3).....	108	56,144.41	8,709.42	80.64	6.44
Beltrami (4) (a).....	8	18,360.00	5,447	680.93	3.37
Benton (2).....	94	52,702.65	9,885.20	105.16	5.35
Big Stone (4).....	56	45,174.65	7,646.04	136.54	5.91
Blue Earth (1).....	288	293,716.54	20,170.82	70.04	14.56
Brown (2).....	138	118,403.69	12,921.91	93.64	9.17
Carlton (4) (a).....	57	123,393.24	20,328.51	363	6.02
Carver (1).....	285	274,489.75	13,899.27	48.77	19.75
Cass (3).....	15	7,227.00	2,670.76	178.05	2.71
Chippewa (4).....	89	50,535.02	6,269.74	70.47	8.06
Chisago (1) (a).....	223	109,491.45	13,234.82	59.35	8.35
Clay (3).....	123	225,652.58	23,421	190.41	9.63
Cook (4) (a).....	2	200.00	139.13	69.57	1.43
Cottonwood (4).....	82	68,429.95	9,322.65	108.34	7.35
Crow Wing (4) (a).....	14	11,770.00	1,763.50	125.96	6.69
Dakota (1).....	259	405,694.98	19,212.15	74.18	21.12
Dodge (1).....	230	234,100.59	16,325.87	70.94	14.34
Douglas (2).....	194	150,948.47	19,825.15	102.15	7.61
Faribault (1).....	227	233,744.02	37,777.17	166.42	6.19
Fillmore (1).....	384	430,327.50	24,194.74	63.27	17.77
Freeborn (1).....	280	249,901.54	21,518.59	77.71	11.61
Goodhue (1).....	339	464,534.80	20,643.89	60.89	22.51
Grant (3).....	47	43,359.89	8,839.23	188.07	4.95
Hennepin * (1).....	403	1,132,521.82	20,025.56	49.67	56.55
Houston (1).....	173	157,758.93	13,609.84	75.19	11.59
Hubbard (4).....	7	4,630.00	1,769.23	252.78	2.62
Isanta (2) (a).....	198	118,684.62	13,883.46	70.11	8.55
Itaska (4) (a).....	8	26,575.00	3,737.65	467.21	7.11
Jackson (4).....	120	143,071.29	27,540.52	229.50	5.19
Kanabec (2) (a).....	20	8,279.00	2,812.74	140.64	2.94
Kandiyohi (2).....	221	137,141.63	17,033.30	77.07	8.05
Kittson (4).....	19	9,724.00	2,200	115.79	4.42
Lac qui Parle (4).....	136	91,033.27	16,683.91	122.68	5.46
Lake (4) (a).....	22	61,795.02	9,931.29	451.42	6.22
Le Sueur (1).....	229	206,509.81	13,249.40	57.86	15.13
Lincoln (4).....	33	17,906.00	3,533.53	107.08	5.07
Lyon (4).....	75	67,440.50	10,074.55	134.32	6.69
McLeod (1).....	242	218,423.64	18,156.13	75.03	12.03

\*Excepting land sales of the city of Minneapolis.

TABLE I.—*Continued.*

COUNTIES.	Number of sales recorded.	Aggregate amount of sales.	Number of acres sold.	Average size of tract sold, acres.	Average price paid per acre.
Martin (3).....	121	\$167,802.96	29,566.43	244.35	\$5.64
Marshall (4).....	13	11,865.00	1,627.76	125.25	7.10
Meeker (2).....	246	189,763.63	17,642.51	71.72	10.76
Mille Lacs (3) (a).....	38	18,509.50	3,827.78	100.73	4.83
Morrison (2).....	98	64,018.36	10,166.79	103.74	6.30
Mower (1).....	211	278,987.66	20,582.56	97.55	13.55
Murray (4).....	65	187,268.73	46,112.85	709.43	4.11
Nicollet (1).....	139	108,897.55	9,183.77	66.07	11.86
Nobles (4).....	106	126,257.01	19,201.28	181.14	6.58
Norman (4).....	55	93,435.01	47,009.18	854.70	1.98
Olmsted (1).....	271	358,064.49	18,388.77	67.85	19.47
Otter Tail (3).....	422	320,188.88	39,971.69	94.72	8.01
Pine (4) (a).....	64	80,514.10	19,089.90	298.28	4.22
Pipestone (4).....	18	23,351.81	6,136.30	340.90	3.82
Polk (4).....	230	319,128.26	93,970.73	408.65	3.39
Pope (3).....	143	89,409.16	14,024.48	98.00	6.37
Ramsey "D".....	175	379,924.15	7,645.69	43.69	49.82
Redwood (3).....	77	84,270.21	11,954.12	152.24	7.04
Renville (3).....	186	120,204.25	15,075.67	86.43	7.29
Rice (1).....	351	330,258.77	19,744.29	56.25	16.67
Rock (3).....	86	110,258.71	14,514.55	168.77	7.59
St. Louis (4).....	413	372,940.39	88,397.38	214.03	4.22
Scott (1).....	153	233,074.02	11,667.97	76.26	19.98
Sherburne (2).....	121	64,108.70	10,636.60	87.91	6.03
Sibley (2).....	234	201,700.48	19,137.96	81.79	10.54
Stearns (2).....	487	344,468.52	45,425.78	93.28	7.58
Steele (1).....	311	290,502.77	18,708.07	60.15	15.52
Stevens (3).....	75	104,909.10	28,668.06	382.24	3.66
Swift (3).....	114	98,815.39	13,328.24	116.91	7.31
Todd (2).....	162	80,894.71	15,110.36	93.27	5.35
Traverse (4).....	40	42,660.75	8,187.87	204.70	5.21
Wabasha (1).....	207	315,804.02	15,863.02	76.63	19.91
Wadena (4).....	73	46,308.96	7,156.21	98.03	6.47
Waseca (1).....	142	176,630.49	12,111.02	85.29	14.58
Washington (1).....	205	212,996.87	13,055.19	63.68	16.31
Watonswan (3).....	85	84,372.28	9,583.98	112.75	8.80
Wilkin (3).....	37	68,934.17	9,761.48	263.91	7.06
Winona (1).....	239	247,992.13	14,794.86	61.90	16.77
Wright (1).....	401	241,883.47	21,738.26	54.23	11.12
Yellow Medicine (4).....	66	45,353.40	7,097.52	107.54	6.39
City of Minneapolis "D".....	101	698,783.75	1,982.03	19.62	325.55

TABLE I.—*Continued.*

## SUMMARIES BY GROUPS.

GROUPS.	No. of sales recorded.	Aggregate amount of sales.	No. of acres sold.	Average size of tract sold, acres.	Average price paid per acre.
All sales excepting foreclosures.					
The State.....	12,415	\$13,624,839.93	1,358,381.20	109.43	\$10.03
Group 1.....	6,192	\$7,200,317.61	427,846.03	69.10	\$16.83
Group 2.....	2,367	1,639,219.83	209,866.72	88.66	7.81
Group 3.....	1,677	1,600,058.49	234,916.89	140.08	6.81
Group 4.....	1,903	2,106,536.10	476,123.84	250.23	4.42
Group "D".....	276	1,078,707.90	9,627.72	34.88	111.94
Group "A".....	12,139	12,546,132.03	1,348,912.53	111.12	9.30
Group "B".....	685	594,863.67	99,863.46	145.78	5.95
Group "C".....	11,454	11,951,258.36	1,249,059.07	113	9.57
Group "E".....	3,657	4,121,002.79	282,711.48	77.07	14.58
Group "F".....	1,570	1,508,190.31	301,499.12	197.13	5.00
Mortgage foreclosures.					
The State.....	1,169	\$1,232,857.09	133,522.54	114.22	\$9.17
Group 1.....	789	\$987,040.23	89,567.25	113.52	\$10.91
Group 2.....	146	82,470.10	14,286.44	97.81	5.77
Group 3.....	130	83,833.51	16,145.55	124.19	5.04
Group 5.....	96	58,668.06	12,703.30	132.29	4.62
Group "D".....	8	20,845.19	820.00	102.50	25.42
All transfers, including foreclosures.					
The State.....	13,584	\$14,857,697.02	1,491,903.74	109.84	\$9.96
Group 1.....	6,981	\$8,187,357.84	517,413.28	74.12	\$15.82
Group 2.....	2,513	1,721,680.93	224,153.16	89.20	7.68
Group 3.....	1,807	1,683,892.00	251,062.44	138.94	6.71
Group 4.....	1,999	2,165,204.16	488,827.14	244.63	4.43
Group "D".....	284	1,099,553.09	10,447.72	27.27	144.76
Group "A".....	13,300	13,758,143.93	1,481,456.02	111.60	9.27
Group "B".....	691	599,909.47	100,319.95	145.18	5.98
Group "C".....	12,609	13,158,234.46	1,381,136.07	109.76	9.51
Group "E".....	4,411	5,021,482.99	370,757.83	84.05	13.54
Group "F".....	1,630	1,618,745.11	368,525.21	189.65	5.24

The group of counties marked (1) are those 90 per cent. of whose present assessed land was reported in 1881 for taxation. Group (2) includes those with from 66 to 90 per cent. of land thus reported; group (3) with from 50 to 66 per cent., and group (4) with less than 50 per cent.

Group "A" includes all acre property in the State excepting the speculative and city acre property.

Group "B" includes all land found in the timber and mineral counties marked in table as (a.)

Group "C" includes the counties mainly or exclusively devoted to agriculture, and is made up of those not in groups "B" and "D."

Group "D" includes city, manufacturing and mining acre property.

Group "E" includes the counties exhibiting a bad mortgage record in 1881, and group "F" are those exhibiting such a record in 1891.



TABLE II.

The selling value of lands in Minnesota, as shown by the records of deeds made for land sold (other than town lots and mortgage foreclosures) during the calendar year 1891.

COUNTIES.	Number of sales recorded.	Aggregate amount of sales.	Number of acres sold.	Average size of tract sold, acres.	Average price paid per acre.
The State.....	18,526	\$27,643,568.22	2,061,561.78	111.29	\$13.41
Aitkin.....	37	\$58,449.78	16,907.55	469.73	\$3.45
Anoka.....	125	143,153.99	10,018.54	80.15	14.29
Becker.....	114	121,718.86	21,047.98	184.63	5.78
Beltrami.....	12	25,741.45	6,014.14	501.17	4.29
Benton.....	142	119,327.99	13,860.21	97.61	8.70
Big Stone.....	108	111,190.18	13,646.37	126.36	8.15
Blue Earth.....	424	577,869.22	27,697.36	65.35	20.86
Brown.....	221	267,358.21	19,905.54	90.07	13.43
Carlton.....	118	391,290.78	16,437.41	139.30	23.28
Carver.....	148	284,037.00	8,633.78	58.33	32.89
Cass.....	42	158,333.67	51,197.84	121.90	3.09
Chippewa.....	230	306,541.81	35,313.44	153.54	8.68
Chisago.....	184	145,971.53	13,314.77	72.36	10.96
Clay.....	126	246,726.65	21,724.28	172.41	11.36
Cook.....	45	44,202.48	6,076.45	135.03	7.29
Cottonwood.....	203	290,855.39	26,601.52	131.06	10.93
Crow Wing.....	47	71,638.88	20,980.22	446.39	3.41
Dakota.....	241	446,824.22	15,618.00	64.80	28.61
Dodge.....	256	344,612.04	19,975.16	78.03	17.25
Douglas.....	203	180,097.71	15,054.13	74.16	11.96
Faribault.....	434	604,395.24	38,955.28	89.76	15.51
Fillmore.....	445	561,810.00	27,498.00	61.79	20.44
Freeborn.....	466	502,875.45	46,379.90	99.63	10.84
Goodhue.....	311	432,901.27	19,763.27	63.54	21.95
Grant.....	161	192,241.35	17,491.06	108.64	10.99
*Hennepin.....	277	860,871.70	10,297.98	37.18	83.60
Houston.....	214	193,138.50	15,291.07	66.77	12.63
Hubbard.....	51	71,020.76	15,428.25	302.51	4.60
Isanti.....	183	136,446.04	17,658.08	96.42	7.72
Itasca.....	59	76,171.27	27,439.74	465.08	2.78
Jackson.....	365	500,004.97	40,873.54	119.98	12.27
Kanabec.....	52	45,950.99	4,203.12	80.83	10.93
Kandiyohi.....	228	322,605.90	26,089.83	114.43	12.37
Kittson.....	79	197,193.69	19,147.73	242.38	10.30
Lac qui Parle.....	310	502,988.33	50,085.27	161.57	10.04
Lake.....	76	115,464.00	9,895.98	130.21	11.66
LeSueur.....	223	303,864.78	12,658.29	56.76	24.01
Lincoln.....	202	284,617.86	26,984.07	133.58	10.55
Lyon.....	267	411,931.57	52,330.79	121.09	12.43
McLeod.....	282	432,939.94	19,934.28	70.69	21.72

\*Excepting land sales of the city of Minneapolis.

TABLE II.—Continued

COUNTIES.	Number of sales recorded.	Aggregate amount of sales.	Number of acres sold.	Average size of tract sold, acres.	Average price paid per acre.
Martin.....	494	\$661,375.67	58,263.13	117.87	\$11.36
Marshall.....	122	159,661.52	27,606.36	226.28	5.78
Meeker.....	351	432,713.09	27,392.98	78.04	15.79
Mille Lacs.....	82	74,676.00	10,103.60	123.21	7.39
Morrison .....	376	309,265.04	35,049.79	93.22	8.22
Mower.....	516	696,656.35	47,136.22	91.35	14.78
Murray.....	245	401,093.21	36,811.46	150.25	10.90
Nicollet.....	147	202,462.88	10,148.18	69.04	19.95
Nobles.....	441	794,114.36	68,397.31	155.09	11.61
Norman.....	195	151,153.82	18,856.98	96.70	8.01
Olmsted.....	256	414,555.98	18,913.69	74.66	21.91
Otter Tail.....	457	404,621.94	46,007.21	100.67	8.79
Pine.....	102	225,124.11	30,830.97	302.26	7.31
*Pipestone.....	246	673,183.00	34,644.31	140.82	19.43
Polk.....	393	516,496.65	58,751.14	149.49	8.79
Pope.....	250	228,645.82	24,229.26	96.92	9.43
Ramsay.....	98	477,049.00	1,789.10	18.45	266.64
Redwood.....	275	396,205.37	34,018.66	123.70	11.64
Renville.....	509	615,198.84	62,263.79	122.32	9.88
Rice.....	225	380,605.13	13,548.27	60.21	28.00
Rock.....	250	744,125.47	43,249.63	173.00	17.20
St. Louis.....	553	2,073,060.13	87,026.88	157.37	23.82
Scott.....	132	226,215.08	9,301.84	70.47	24.32
Sherburne.....	105	96,398.78	8,899.58	84.76	10.83
Sibley.....	258	353,668.78	22,390.02	86.78	15.80
Stearns.....	731	818,159.88	66,302.12	90.70	12.34
Steele.....	246	290,976.08	15,800.05	64.23	19.19
Stevens.....	153	246,169.41	30,742.02	200.92	8.01
Swift.....	228	218,087.11	25,052.87	109.88	8.70
Todd.....	409	314,169.66	40,024.01	97.85	7.85
Traverse.....	79	91,529.28	12,291.97	155.59	7.45
Wabasha.....	237	399,351.66	21,166.01	89.30	18.87
Wadena.....	112	83,807.51	14,610.43	130.45	5.07
Waseca.....	163	286,624.52	14,154.36	86.84	20.25
Washington.....	151	258,702.41	7,967.31	52.77	32.47
Watonswan.....	195	348,955.40	22,909.42	117.48	15.23
Wilkin.....	86	170,775.34	17,436.73	203.20	9.71
Winona.....	248	353,832.24	17,606.35	70.70	20.43
Wright.....	440	491,780.97	28,332.61	64.39	17.35
Yellow Medicine.....	240	328,060.38	32,964.37	137.35	9.95
City of Minneapolis.....	19	149,080.00	140.48	7.39	1,061.22

\*This includes quarries.

TABLE II.—*Continued.*

## SUMMARIES BY GROUPS.

GROUPS.	Number of sales recorded.	Aggregate amount of sales.	Number of acres sold.	Average size of tract sold, acres.	Average price paid per acre.
All sales excepting foreclosures.					
The State.....	18,526	\$27,643,568.22	2,061,561.78	111.29	\$13.41
Group 1.....	6,666	\$9,693,873.29	480,092.12	72.02	\$20.17
Group 2.....	3,384	3,539,316.06	306,846.95	91.41	11.53
Group 3.....	3,422	4,827,756.90	485,737.48	141.95	9.94
Group 4.....	4,937	8,956,492.17	786,957.65	157.39	11.38
Group "D".....	117	626,129.80	1,929.58	16.49	324.38
Group "A".....	18,409	27,017,438.42	2,059,632.20	111.88	13.11
Group "B".....	1,003	1,417,269.19	180,501.29	179.96	7.85
Group "C".....	17,406	25,600,169.23	1,879,130.91	107.96	13.62
Group "E".....	5,092	7,295,775.09	472,028.96	92.70	15.46
Group "F".....	2,368	2,771,050.87	331,540.30	140.01	8.36
Mortgage Foreclosures.					
The State.....	1,505	\$2,050,311.98	200,061.53	132.93	\$7.18
Group 1.....	256	\$452,216.92	24,403.64	95.32	\$18.56
Group 2.....	239	195,959.74	29,324.45	122.69	6.68
Group 3.....	293	259,799.82	40,197.28	140.10	6.46
Group 4.....	631	466,388.06	102,424.89	162.32	4.52
Group "D".....	86	675,947.44	3,711.27	43.15	182.15
All transfers, including foreclosures.					
The State.....	20,031	\$29,693,880.20	2,261,623.31	112.91	\$13.13
Group 1.....	6,922	\$10,146,090.21	504,495.76	72.87	\$20.11
Group 2.....	3,623	3,735,275.80	336,171.40	92.79	11.11
Group 3.....	3,715	5,087,556.72	525,936.76	141.58	9.67
Group 4.....	5,568	9,422,880.23	889,380.54	159.75	10.59
Group "D".....	203	1,302,077.24	5,638.85	27.78	230.65
Group "A".....	19,828	28,391,802.96	2,255,984.46	113.78	12.59
Group "B".....	1,075	1,464,985.54	192,164.67	178.75	7.62
Group "C".....	17,753	26,926,817.42	2,063,819.79	116.26	13.05
Group "E".....	5,264	7,518,322.50	491,457.54	93.36	15.29
Group "F".....	3,090	2,380,123.81	446,596.27	144.53	5.33

The group of counties marked (1) are those, 90 per cent. of whose present assessed land was reported in 1881 for taxation. Group (2) includes those with from 66 to 90 per cent. of land thus reported; group (3) with from 50 to 66 per cent., and group (4) with less than 50 per cent.

Group "A" includes all acre property in the state excepting the speculative and city acre property.

Group "B" includes all land found in the timber and mineral counties.

Group "C" includes the counties mainly or exclusively devoted to agriculture, and is made up of those not in groups "B" and "D."

Group "D" includes city, manufacturing and mining acre property.

Group "E" includes the counties exhibiting a bad mortgage record in 1881, and group "F" are those exhibiting such a record in 1891. For names of counties in these groups see table I.



TABLE III.

The selling value of railroad lands in Minnesota, as shown by the records of deeds for lands sold during the calendar years 1881 and 1891.

COUNTIES.	1881.			1891.		
	No. of sales	Consideration.	Number of acres sold.	No. of sales	Consideration.	Number of acres sold.
The State.....	792	\$761,476.40	208,785.01	1,374	\$1,278,783.80	264,903.24
Aitkin ..	13	\$6,135.76	3,444.85	10	\$38,799.78	14,583.71
Anoka ..	8	6,432.37	2,482.04	5	842.68	192.58
Becker ..	1	1,200.00	420	10	5,897.44	7,575.08
Beltrami ..				1	7,686.45	4,837.16
Benton ..	15	2,326.09	874.75	2	560.00	80
Big Stone ..				17	8,107.24	1,508.35
Blue Earth ..	19	17,171.61	2,049.45	16	7,184.58	808.67
Brown ..	5	2,040.00	208.70	38	23,831.31	2,628.09
Carlton ..	10	42,427.50	6,050.34	7	1,469.03	396.45
Cass ..	3	3,110.00	1,384	11	129,633.67	45,534.55
Chippewa ..	19	9,456.83	1,674	42	21,305.59	3,359.24
Clay ..				4	872.00	160
Cottonwood ..	8	8,378.27	1,299.61	9	5,384.77	635.45
Crow Wing ..	2	700.00	68.25	8	36,124.48	16,194.94
Dakota ..	4	887.97	179.55			
Dodge ..	35	21,656.10	2,344.08	12	6,554.14	680.19
Douglas ..				5	1,113.70	142.53
Faribault ..	6	49,100.27	18,105.70	20	8,915.00	1,780.31
Freeborn ..	43	18,968.61	2,646.64	53	30,852.49	9,368.33
Goodhue ..	3	1,600.00	160			
Grant ..	3	2,101.14	684.38	13	7,006.96	940.86
Hubbard ..	3	3,560.00	1,391.79	11	17,612.00	9,300.99
Isanti ..	42	13,922.32	3,837.10	4	11,081.20	2,261.79
Itasca ..				11	19,010.46	13,765.26
Jackson ..	14	70,685.22	18,328.15	63	87,081.27	6,928.30
Kanabec ..	1	120.00	240	2	450.00	86
Kandiyohi ..	13	2,632.31	701.03	24	12,226.90	1,702.12
Kittson ..				14	11,986.61	2,603.58
Lac qui Parle ..	3	1,550.27	400.63	31	27,496.06	5,515.01
LeSueur ..	17	2,916.22	446.88	4	1,754.28	239.90
Lincoln ..	1	525.00	160	16	23,028.75	2,142.50
Lyon ..	3	10,416.14	2,604.72	1	744.00	80
McLeod ..	8	4,726.00	760	1	260.00	40
Martin ..	1	55,954.50	16,102.04	86	55,779.43	7,614.21
Marshall ..				22	13,844.81	2,781.41
Meeker ..	24	6,576.81	1,306.20	25	12,165.41	2,182.30
Mille Lacs ..	1	523.50	120	9	2,520.00	400
Morrison ..	7	2,529.00	1,080	69	19,488.36	4,372.70
Murray ..	22	61,576.46	12,794.15	52	102,054.22	9,453.78
Nicollet ..	39	14,824.20	1,789.11	27	13,504.06	1,460.67
Nobles ..	35	57,208.69	10,412.71	116	186,371.21	17,566.74
Norman ..	6	52,755.53	41,012.47	20	10,281.09	2,199.89
Olmsted ..	6	4,967.10	385.65	2	649.00	80
Otter Tail ..	6	1,164.58	389.33	21	6,918.96	2,505.48
Pine ..				5	28,047.39	9,642.78
Pipestone ..				17	25,455.00	2,545.85
Polk ..	9	33,555.63	22,343.22	24	34,663.83	8,063.46
Pope ..	2	609.71	159.49	22	8,382.42	1,352.35
Redwood ..	1	10,241.34	2,947.15	30	24,657.89	3,264.41
Renville ..	19	8,852.69	1,285.25	61	48,063.04	5,456.23
Rice ..	15	200.00	20	7	3,881.87	995.83
Rock ..	8	9,796.71	2,036.99	2	439.00	54.36
St. Louis ..	2	3,860.00	1,522.05	9	5,958.71	1,407.30
Scott ..	15	3,014.18	659.55	3	1,358.36	136.48

TABLE III.—*Continued.*

COUNTIES.	1881.			1891.		
	No. of sales	Consider- ation.	Number of acres sold.	No. of sales	Consider- ation.	Number of acres sold.
Sherburne.....	3	\$472.10	160	5	\$1,761.12	391.36
Sibley.....	28	13,044.63	1,973.88	42	22,533.92	3,082.73
Stearns.....	32	14,458.30	3,451.88	64	21,280.88	3,458.85
Steele.....	110	44,072.07	5,218.19	24	10,039.00	1,160
Stevens.....	2	3,000.00	560	8	2,358.65	416.05
Swift.....	2	1,199.88	232.20	42	12,817.90	2,215
Todd.....	8	1,636.98	528.66	33	11,355.77	3,986.55
Traverse.....	3	4,250.00	1,000	5	1,678.28	399
Wabasha.....	3	1,050.00	100	.....	.....	.....
Wadena.....	6	2,040.00	673.33	15	10,644.19	6,670.51
Waseca.....	31	28,580.00	2,754.45	2	2,400.06	240
Watonwan.....	6	5,505.64	1,001.14	1	640.00	80
Wilkin.....	3	833.17	270.71	4	524.00	160
Winona.....	3	780.00	100	.....	.....	.....
Wright.....	26	6,704.35	1,094.61	11	6,707.72	638.92
Yellow Medicine.....	6	991.65	293.96	24	14,694.47	2,396.10
Summaries by groups.						
Group 1.....	383	\$221,218.68	38,813.86	182	\$94,051.50	17,629.30
Group 2.....	186	66,181.91	16,844.24	318	138,691.25	24,567.60
Group 3.....	58	104,092.86	27,652.68	324	306,511.36	77,728.58
Group 4.....	165	369,982.95	125,474.23	550	739,529.69	144,977.76

For explanation of groups see end of Table I.

TABLE IV.

The selling value of lands sold by private sale, other than railroad lands and city and town lots, as shown by the records of deeds made during the calendar years 1881 and 1891.

COUNTIES.	1881.			1891.		
	Number of sales re- corded.	Aggregate amount of sales.	Number of acres sold.	Number of sales re- corded.	Aggregate amount of sales.	Number of acres sold.
The State.....	11,623	\$12,863,363.53	1,149,596.19	17,152	\$26,364,784.42	1,796,658.54
Aitkin .....	19	\$11,275.98	2,302.83	27	\$19,650.00	2,323.84
Anoka .....	146	101,673.00	12,902.92	120	142,311.31	9,825.96
Becker .....	107	54,944.41	8,229.42	104	115,821.42	13,472.90
Beltrami .....	8	18,360.00	5.447	11	18,055.00	1,176.98
Benton .....	79	50,376.56	9,010.45	140	118,767.99	13,780.21
Big Stone .....	56	45,174.65	7,646.04	91	103,082.94	12,138.02
Blue Earth .....	269	276,544.93	18,121.37	408	570,684.64	26,888.09
Brown .....	133	116,363.69	12,713.21	183	243,526.90	17,277.45
Carlton .....	47	80,965.74	14,278.17	111	389,821.75	16,040.96
Carver .....	285	274,489.75	13,899.27	148	284,037.00	8,633.78
Cass .....	12	4,117.00	1,286.76	31	28,700.00	5,663.29
Chippewa .....	70	41,081.19	4,595.74	188	285,236.22	31,954.20
Chisago .....	223	109,491.45	13,234.82	184	145,971.53	13,314.77
Clay .....	123	225,652.58	23,421	122	245,854.65	21,564.28
Cook .....	2	200.00	139.13	45	44,202.48	6,076.45
Cottonwood .....	74	60,051.68	8,024.97	194	285,470.62	25,966.07
Crow Wing .....	12	11,070.00	1,695.25	39	35,514.40	4,785.28
Dakota .....	255	404,807.01	19,032.60	241	446,824.22	15,618
Dodge .....	195	212,444.49	13,981.79	244	338,057.90	19,294.97
Douglas .....	194	150,948.47	19,825.15	198	178,984.01	14,911.60
Faribault .....	221	184,643.75	19,661.47	414	595,480.24	37,174.97
Fillmore .....	384	430,327.50	24,194.74	445	561,810.00	27,498.09
Freeborn .....	237	230,932.93	18,871.95	413	472,022.96	37,011.57
Goodhue .....	336	462,934.80	20,483.89	311	432,901.27	19,763.27
Grant .....	44	41,258.75	8,154.85	148	185,234.39	16,550.20
Hennepin .....	403	1,132,521.82	20,025.56	277	860,871.70	10,297.98
Houston .....	173	157,758.93	13,609.84	214	193,138.50	15,291.07
Hubbard .....	4	1,070.00	377.44	40	53,408.76	6,127.26
Isanti .....	156	104,762.30	10,046.36	179	125,364.84	15,396.29
Itasca .....	8	26,575.00	3,737.65	48	57,160.81	13,674.48
Jackson .....	106	72,386.07	9,212.37	302	412,923.70	33,945.24
Kanabec .....	19	8,159.00	2,572.74	50	45,500.99	4,116.12
Kandiyohi .....	208	134,509.32	16,332.27	204	310,379.00	24,387.71
Kittson .....	19	9,724.00	2,200.00	65	185,207.08	16,544.15
Lac qui Parle .....	133	89,483.00	16,283.28	279	475,492.27	44,570.26
Lake .....	22	61,795.02	9,931.29	76	115,464.00	9,895.98
Le Sueur .....	212	197,593.59	12,832.52	219	302,110.50	12,418.39
Lincoln .....	32	17,381.00	3,373.53	186	261,589.11	24,841.57
Lyon .....	72	57,024.36	7,469.83	266	411,187.57	32,250.79
McLeod .....	234	213,697.64	17,396.13	281	432,679.94	19,894.28
Martin .....	120	111,848.46	13,464.39	408	605,596.24	50,648.92
Marshall .....	13	11,865.00	1,627.76	100	145,816.71	24,824.95
Meeker .....	222	183,186.82	16,336.31	326	420,547.68	25,210.68
Mill Lake .....	37	17,986.00	3,707.78	73	72,156.00	9,703.60
Morrison .....	91	61,498.36	9,086.79	307	289,776.68	30,677.09
Mower .....	211	278,987.66	20,582.56	516	696,656.35	47,136.22
Murray .....	43	125,692.27	33,318.70	193	299,038.99	27,357.68
Nicollet .....	100	94,073.35	7,394.66	120	188,958.82	8,687.51
Notles .....	71	69,048.32	8,788.57	325	607,743.15	50,830.57
Norman .....	49	40,679.48	5,996.71	175	140,877.73	16,657.09



TABLE IV—Continued.

COUNTIES.	1881.			1891.		
	Number of sales re- corded.	Aggregate amount of sales.	Number of acres sold.	Number of sales re- corded.	Aggregate amount of sales.	Number of acres sold.
Olmsted .....	265	\$353,097.39	18,003.12	254	\$413,906.98	18,833.69
Otter Tail .....	416	319,024.30	39,582.36	436	397,702.98	43,501.73
Pine .....	64	80,514.10	19,089.90	97	197,076.72	21,188.19
Pipestone .....	18	23,351.81	6,136.30	229	647,628.00	32,098.46
Polk .....	221	285,572.63	71,627.51	369	481,832.82	50,687.68
Pope .....	141	88,799.45	13,864.99	228	220,263.40	22,876.91
Ramsey .....	175	379,924.15	7,643.69	98	477,049.00	1,789.10
Redwood .....	76	74,028.87	9,006.97	245	371,547.48	30,754.25
Renville .....	167	111,351.56	14,790.42	448	567,135.80	56,807.56
Rice .....	336	330,058.77	19,724.29	218	376,722.46	12,552.44
Rock .....	78	100,462.00	12,477.56	248	743,686.47	43,195.27
St Louis .....	411	369,040.39	86,875.33	544	2,067,101.42	85,619.58
Scott .....	138	230,059.84	11,008.42	129	224,856.72	9,165.36
Sherburne .....	118	63,636.60	10,476.60	100	94,637.66	8,508.22
Sibley .....	206	188,655.85	17,164.08	216	331,134.86	19,307.29
Stearns .....	455	330,010.22	41,973.90	667	796,879.00	62,843.27
Steele .....	201	246,430.70	13,489.88	222	280,946.08	14,640.05
Stevens .....	73	101,909.10	28,108.06	145	243,810.76	30,325.97
Swift .....	112	97,615.51	13,096.04	186	205,269.21	22,837.87
Todd .....	154	79,257.73	14,581.70	376	302,813.89	36,037.46
Traverse .....	37	38,410.75	7,187.87	74	89,851.00	11,892.97
Wabasha .....	204	314,754.02	15,763.02	237	399,351.66	21,166.01
Wadena .....	67	44,268.96	6,482.88	97	73,163.32	7,939.92
Waseca .....	111	148,050.49	9,356.57	161	284,224.52	13,914.36
Washington .....	205	212,996.87	13,055.19	151	258,702.41	7,967.31
Watsonwan .....	79	78,866.64	8,582.84	194	348,315.40	22,829.42
Wilkin .....	34	68,101.00	9,490.77	82	170,151.34	17,276.73
Winona .....	236	247,112.13	14,694.86	248	353,832.24	17,606.35
Wright .....	375	235,189.12	20,643.65	429	485,073.25	27,693.69
Yellow Medicine....	60	44,451.75	6,863.56	216	313,365.91	30,568.27
City of Minneapolis..	101	698,783.75	1,982.03	19	149,080.00	140.48
Summaries by Groups.						
Group 1.....	5,809	\$6,979,098.93	389,032.17	6,484	9,599,821.79	462,462.82
Group 2.....	2,181	1,573,037.92	193,022.48	3,066	3,400,624.81	282,279.35
Group 3.....	1,619	1,495,965.63	207,264.21	3,098	4,521,245.54	408,008.90
Group 4.....	1,738	1,736,553.15	350,649.61	4,387	8,216,962.48	641,977.89

For explanation of groups see end of Table I.



Hennepin.....	12.96	56.55	54.92	22.60	75.89	83.60	82.30	30.89	41	38
Houston.....	12.40	11.71	8.59	8.59	7.99	12.63	12.61	6.15	73	49
Hubbard.....	.....	2.56	2.62	.....	5.58	8.72	4.40	3.20	.....	72
Isanti.....	31.43	3.63	8.69	3.49	2.22	8.14	7.50	2.93	40	39
Itasca.....	.....	7.11	7.11	1.95	3.32	4.18	2.79	3.05	27	109
Jackson.....	.....	7.86	5.21	4.97	5.91	12.16	12.04	4.95	95	41
Kanabec.....	5.68	3.31	2.95	3.17	7.38	11.05	9.50	2.61	135	27
Kandiyohi.....	6.32	3.75	7.75	6.28	7.18	12.72	11.91	6.02	81	51
Kittson.....	.....	.....	4.42	3.20	3.72	11.19	9.22	3.91	72	42
Lac qui Parle.....	3.03	3.89	5.37	4.79	3.52	10.69	9.78	4.58	89	47
Lake.....	.....	6.22	6.22	1.57	2.48	11.66	10.55	4.98	25	47
Le Sueur.....	9.96	15.43	14.60	8.86	12.37	24.33	23.51	11.83	61	50
Lincoln.....	2.90	3.28	4.80	4.80	3.97	10.75	10.24	4.59	102	45
Lyon.....	5.00	7.64	6.46	5.07	5.20	12.43	12.45	4.89	76	39
McLeod.....	5.44	6.22	11.36	7.44	7.33	21.77	21.58	10.13	65	47
Martin.....	5.75	3.41	5.68	5.32	6.46	11.95	11.27	6.01	94	53
Marshall.....	.....	7.10	7.10	5.58	4.65	5.87	5.40	3.73	79	69
Meeker.....	7.40	5.03	10.47	7.00	10.19	16.98	15.48	7.98	67	52
Mille Lacs.....	1.91	4.36	4.72	3.10	3.29	7.43	7.15	3.53	66	49
Morrison.....	4.10	2.33	6.22	4.25	9.48	9.44	8.87	4.22	68	48
Mower.....	10.86	13.55	12.66	10.27	9.77	14.78	14.69	8.90	81	60
Murray.....	3.82	3.77	4.06	4.87	3.35	10.80	10.49	4.81	120	46
Nicollet.....	7.68	8.23	12.72	9.18	.....	21.75	19.95	10.36	81	52
Nobles.....	4.47	7.86	6.25	4.80	2.24	11.05	11.94	4.90	77	41
Norman.....	.....	6.78	1.98	4.80	5.54	8.45	7.22	3.96	.....	55
Olmsted.....	13.54	12.88	17.83	13.78	16.30	21.81	21.46	12.80	78	55
Otter Tail.....	6.09	2.99	7.93	4.82	6.98	9.14	8.39	4.28	61	51
Pine.....	28.86	4.21	4.28	2.34	1.90	9.30	7.21	2.54	55	35
Pipestone.....	.....	3.82	3.82	4.05	8.01	20.13	19.08	4.50	24	106
Polk.....	3.49	1.55	3.39	4.38	4.23	4.29	6.94	4.03	129	58
Pope.....	3.36	6.71	6.06	4.24	7.75	9.75	9.29	4.13	70	44
Ramsey.....	20.13	49.82	47.81	24.34	155.11	266.64	290.63	61.06	47	23
Redwood.....	6.49	8.21	6.95	5.38	4.20	12.98	11.58	5.17	77	45
Renville.....	3.91	7.53	7.05	5.34	6.32	11.75	11.64	5.40	76	66
Rice.....	10.01	10.00	16.17	12.21	16.45	30.01	20.12	12.01	70	70
Rock.....	6.04	8.05	7.46	4.95	8.36	17.20	17.11	6.21	66	36
St. Louis.....	.....	2.54	4.22	2.56	3.61	24.14	22.91	13.69	61	60
Scott.....	21.62	4.57	20.03	10.10	10.66	24.53	22.95	10.33	50	41
Sherburne.....	3.19	2.95	5.91	2.96	5.51	11.12	8.96	4.26	50	48
Sibley.....	5.40	6.61	10.06	7.74	7.32	17.15	15.69	8.81	77	56



TABLE V.—Continued.

COUNTIES.	1881.				1891.				Percentages of selling values—of assessed value.
	Foreclos- ure sales.	Railroad lands.	Other pri- vate sales.	All sales.	Assessed value.	Foreclos- ure sales.	Railroad lands.	Other pri- vate sales.	
Stearns.....	\$4.08	\$4.18	\$7.94	\$7.41	\$6.19	\$5.62	\$6.15	\$12.79	1881. 84
Steele.....	9.71	8.44	18.26	14.34	10.43	7.09	8.63	19.19	73
Stevens.....	6.38	5.35	3.62	3.73	5.14	6.85	5.67	8.04	61
Swift.....	5.04	5.12	7.46	7.23	5.50	5.33	5.78	8.99	138
Todd.....	3.03	3.10	5.44	5.28	3.25	4.42	2.85	8.40	76
Traverse.....	2.08	4.25	5.35	5.15	4.37	4.23	4.21	7.55	61
Wabasha.....	10.78	10.50	19.97	17.42	10.53	11.98	.....	18.87	85
Wadena.....	5.04	3.03	7.30	6.37	3.69	6.04	1.50	9.21	69
Waseca.....	7.78	10.38	15.82	13.23	10.24	10.74	10.00	30.43	56
Washington.....	15.99	.....	16.31	16.27	11.65	10.18	.....	31.42	77
Watsonwan.....	5.09	5.49	9.19	8.30	5.30	6.33	8.00	15.23	72
Wilkin.....	.....	3.08	7.18	7.15	4.39	4.89	3.28	8.83	64
Winona.....	9.99	7.80	16.77	15.01	10.73	10.04	.....	20.43	61
Wright.....	6.24	6.12	11.68	10.92	7.56	10.59	10.49	17.76	71
Yellow Medicine.....	4.36	3.07	5.53	6.05	4.65	3.66	6.13	10.25	69
Summaries by groups—									53
Group 1.....	10.91	5.70	17.94	15.82	10.92	18.56	5.33	20.19	77
Group 2.....	5.77	3.93	8.15	7.68	5.27	6.68	5.64	11.53	69
Group 3.....	5.04	3.76	7.22	6.71	4.65	6.46	3.94	9.94	49
Group 4.....	4.62	2.95	4.96	4.64	3.96	4.52	5.10	11.38	50

For explanation of groups see end of Table I.

TABLE VI.

The highest and lowest prices paid for land, other than town lots, in Minnesota, during the calendar year of 1881, with the number of acres sold at the respective prices.

COUNTIES.	Maximum price paid per acre for tract of five or more acres.	Number of acres sold at maximum price.	Minimum price paid per acre.	Number of acres sold at minimum price.	Maximum size of tract, acres.	Price paid per acre for maximum tract.	Minimum size of tract, acres.	Highest price paid per acre for minimum size of tract.
The State.....	\$2,000.00	5	\$ .15	723.88	30,091.74	\$2.00	1	\$3,750.00
Aitkin.....	\$12.23	80	\$1.58	320	1,102	\$1.50	1	\$800.00
Anoka.....	54.50	7.34	1.25	525	1,560	1.25	1	200.00
Becker.....	15.00	80	2.44	41	480	2.50	1	350.00
Beltrami.....	3.74	4,574.79	.62	160	4,574.79	3.74	40	2.50
Benton.....	17.50	20	.63	40	800	5.00	3	66.66
Big Stone.....	31.21	160.21	1.60	155.70	164.70	9.11	9.34	9.64
Blue Earth.....	87.50	6	1.97	32	640	8.00	1	20.00
Brown.....	35.00	5	1.27	78.70	301.45	12.52	1	211.50
Carlton.....	18.75	560	.63	80	3,080	3.24	7	30.00
Carver.....	400.00	5	3.75	80	240.50	14.55	1	1,500.00
Cass.....	12.50	80	1.25	40	1,104	2.50	4.37	45.77
Chippewa.....	33.03	5.29	3.75	40	640	9.38	1.50	33.33
Chisago.....	90.00	5	1.25	160	560	7.14	1	25.00
Clay.....	75.00	15	.80	31.40	4,000	2.95	1	100.00
Cook.....	3.58	27.90	.90	111.23	111.23	.90	27.90	3.58
Cottonwood.....	21.25	80	2.50	160	681.30	3.47	1.50	40.00
Crow Wing.....	16.28	28.25	2.63	40	1,040	7.21	3.95	8.10
Dakota.....	48.28	65.65	2.08	60	320	21.87	1	500.00
Dodge.....	51.28	97.50	2.00	5	320	11.72	1	75.00
Douglas.....	50.00	6	1.25	80	350.40	4.99	1	10.00
Faribault.....	23.24	154	1.87	80	8,615.75	3.43	1	75.00
Fillmore.....	38.12	320	1.75	40	364	17.36	1	275.00
Freeborn.....	50.00	80	2.50	20	1,166.11	3.21	1	100.00
Goodhue.....	50.00	106	1.80	10	320	31.25	1	1,200.00
Grant.....	25.00	5	1.20	161.24	640	9.38	1	75.00
Hennepin.....	2,000.00	5	.94	80	264.53	16.63	1	1,500.00
Houston.....	100.62	40	1.25	80	619.50	16.17	1	25.00
Hubbard.....	10.00	10	1.98	135.75	1,104	2.50	10	10.00
Isanti.....	28.36	10.36	1.25	80	240	1.87	1	8.00
Itasca.....	24.58	120	.69	364.80	1,280	7.81	80	5.00
Jackson.....	30.00	5	1.87	80	16,283.85	3.47	2	80.00
Kanabec.....	7.50	80	.50	120	440	1.70	40	7.50
Kandiyohi.....	25.00	80	1.68	160	353.75	8.48	1	40.00
Kittson.....	6.00	40	2.00	120	480	4.18	40	6.00
Lac qui Parle.....	27.00	5	1.23	240	320	5.63	1	50.00
Lake.....	139.66	10.74	2.00	240	2,003.80	4.99	2	65.00
Le Sueur.....	64.85	77.10	1.00	5.71	160	15.63	1.25	80.00
Lincoln.....	13.33	120	1.87	160	160	5.00	2.50	36.00
Lyon.....	15.45	1.65	4.37	40	1,142.87	3.50	1.06	23.60
McLeod.....	50.00	10	.97	5.13	520	6.25	1	75.00
Martin.....	56.25	80	2.50	40	16,102.04	3.47	2	200.00
Marshall.....	16.88	160	3.13	160	165.41	3.93	11	15.00
Meeker.....	30.00	20	1.25	80	480	12.50	5.63	26.65
Mille Lacs.....	15.00	20	.38	80	160	10.00	10	150.00
Morrison.....	37.50	40	.31	80	640	.91	1	100.00
Mower.....	37.50	80	6.25	80	480	10.41	1.60	375.00
Murray.....	48.85	6.51	2.50	80	27,992.33	3.47	1	60.00
Nicollet.....	34.86	17.21	4.00	100	257.50	11.65	1.62	49.38
Nobles.....	22.05	9.07	2.81	160	1,600	3.46	1	100.00
Norman.....	13.75	160	.62	161.84	18,612.42	1.13	2	3.00
Olmsted.....	50.00	80	2.30	13	370	15.82	1	3,750.00
Otter Tail.....	83.33	6	.31	80	1,428.55	2.50	1	150.00
Pine.....	55.00	400	.55	1,120	6,146.14	2.46	1.23	12.20
Pipestone.....	6.25	160	2.50	160	3,680.81	3.47	40	5.00
Polk.....	23.44	160	.63	160	30,091.74	2.00	1	100.00

TABLE VI.—*Continued.*

COUNTIES.	Maximum price paid per acre for tract of five or more acres.	Number of acres sold at maximum price.	Minimum price paid per acre.	Number of acres sold at minimum price.	Maximum size of tract, acres.	Price paid per acre for maximum tract.	Minimum size of tract, acres.	Highest price paid per acre for minimum size of tract.
Pope.....	\$26.66	6	\$ .15	723 88	723.88	\$ .15	1	\$1.00
Ramsey.....	1,325.00	20	2.50	40	488.54	10.23	1	1,000.00
Redwood.....	25.00	80	2.50	40	2,947.15	3.40	2.50	12.00
Renville.....	48.00	5	1.25	160	508	9.84	1	60.00
Rice.....	236.22	5.08	2.00	40	320	17.19	1	75.00
Rock.....	40.00	46	2.18	160	1,198.19	3.47	4	350.00
St. Louis.....	250.00	20	.37	160	3,600	4.79	1	2.00
Scott.....	434.77	23	2.00	5	242.13	18.17	1	400.00
Sherburne.....	35.71	14	1.00	40	339.05	3.30	2	100.00
Sibley.....	100.00	5.41	3.12	80	1,512.45	3.75	1	35.00
Stearns.....	187.50	6.40	.60	10	1,279.84	4.00	1	800.00
Steele.....	80.00	5	2.50	160	480	14.58	1	40.00
Stevens.....	80.00	10	1.56	320	6,024.50	5.00	2	15.00
Swift.....	25.00	160	.94	80	480	5.83	2	250.00
Todd.....	27.77	36	.93	160	186.20	9.67	1	800.00
Traverse.....	10.00	164	1.56	160	640	7.00	40	225.00
Wabasha.....	162.50	16	1.01	1.97	700	42.85	1	35.00
Wadena.....	60.00	10	1.25	280	323.44	2.50	1	50.00
Waseca.....	33.33	240	1.25	80	400	20.00	3	10.00
Washington.....	121.43	14	1.22	80	357.50	6.15	1	15.00
Watsonwan.....	25.00	80	3.43	80	1,170.16	15.38	1.50	100.00
Wilkin.....	20.00	240	.78	160	1,250.30	8.00	6.39	5.47
Winona.....	200.00	10	1.87	40	400	30.00	1	800.00
Wright.....	214.29	7	1.72	48.15	320	9.38	1	100.00
Yellow Medicine.....	50.50	5	1.88	160	334.47	11.96	2	55.00



TABLE VII.

The highest and lowest prices paid for land, other than town lots, in Minnesota, during the calendar year 1891, with the number of acres sold at the respective prices.

COUNTIES.	Maximum price paid per acre, for tract of five or more acres.	Number of acres sold at maximum price.	Minimum price paid per acre.	Number of acres sold at minimum price.	Maximum size of tract, acres.	Price paid per acre for maximum tract.	Minimum size of tract, acres.	Highest price paid per acre for minimum size of tract.
The State.....	\$5,423.00	9.22	\$ .25	160	15,301.28	\$4.96	1	\$10,000.00
Aitkin.....	\$41.67	120	\$1.00	320	9,627.84	\$3.24	4.75	\$73.78
Anoka.....	75.00	40	2.50	40	160.10	9.37	1	5.00
Becker.....	15.62	160	2.00	320	1,106.19	3.35	1	18.00
Beltrami.....	30.01	160.45	6.55	137.30	4,837.16	1.59	124.18	22.55
Benton.....	500.00	10	1.00	40	1,558.59	3.00	1	10.00
Big Stone.....	20.50	8	2.50	40	560	2.32	8	20.50
Blue Earth.....	190.48	6.30	1.71	17.50	260	8.19	1	1,200.00
Brown.....	45.00	10	2.73	40	894.60	4.50	1	100.00
Carlton.....	250.00	30	.50	120	1,340	22.39	1.57	477.71
Carver.....	439.24	6	2.50	40	250	10.00	1	50.00
Cass.....	49.65	15,301.28	1.25	50	15,301.28	4.96	40	5.00
Chippewa.....	43.75	80	1.00	160	3,521.36	5.00	1	50.00
Chisago.....	41.67	120	3.12	320	400	5.25	1	200.00
Clay.....	30.00	10	2.50	160	686.56	13.84	4.60	9.78
Cook.....	68.12	40	.64	156	1,111.35	8.56	20	35.00
Cottonwood.....	23.44	640	3.44	29	640	23.44	1	780.00
Crow Wing.....	500.00	10	1.00	2,395.35	13,074.33	2.42	10	500.00
Dakota.....	1,293.05	9.35	1.29	57.85	400	25.00	1	270.00
Dodge.....	62.50	8	1.87	160	359	16.57	1	125.00
Douglas.....	75.00	5	1.25	40	210.70	14.24	1	75.00
Faribault.....	250.00	14	3.66	18	460	17.39	1	600.00
Fillmore.....	72.46	16.56	2.00	7.50	322.40	18.61	1	600.00
Freeborn.....	45.45	11	2.50	10	2,660.27	2.00	1	50.00
Goodhue.....	1,276.60	7.05	1.34	26.92	280	18.60	1	175.00
Grant.....	31.85	15.75	1.35	184.64	640	10.31	1	2.00
Hennepin.....	5,423.00	9.22	5.95	80	240	13.75	1	1,500.00
Houston.....	25.00	20	.75	160	227	13.21	1	500.00
Hubbard.....	50.00	40	.97	899.46	6,491.40	1.95	1	125.00
Isanti.....	114.29	7	.63	80	2,089.39	4.88	1	300.00
Itasca.....	72.50	5	.45	165.41	4,082.70	3.00	5	72.50
Jackson.....	1,888.49	11.65	2.00	40	520	4.61	1	1,100.00
Kanabec.....	55.00	200	1.87	40	360	1.11	2.70	18.52
Kandiyohi.....	278.00	5	.50	10	2,560	19.49	1	22.00
Kittson.....	24.00	40	2.50	320	7,520	11.97	32	7.50
Lac qui Parle.....	26.25	40	.44	79	747.02	5.35	1	485.00
Lake.....	425.65	17.62	.20	240	1,740	2.30	7.50	133.33
Le Sueur.....	137.93	7.25	2.27	22	221	22.62	1	35.00
Lincoln.....	25.00	320	1.87	40	560	9.82	3.75	5.86
Lyon.....	30.00	318.50	3.12	160	640	18.75	1	475.00
McLeod.....	200.00	6	1.88	40	400	20.00	1	600.00
Martin.....	41.66	120	4.00	80	1,005	40.00	1	500.00
Marshall.....	25.00	160	.25	160	5,950	2.00	5	12.00
Meeker.....	37.89	31.67	3.88	80	677.31	3.25	1	50.00
Millie Lacs.....	25.00	120	2.50	40	624.50	3.20	1	200.00
Morrison.....	107.97	37.62	.63	160	1,270	7.56	1	150.00
Mower.....	125.00	40	1.87	160	640	13.00	1	150.00
Murray.....	32.44	61.66	3.00	78.69	2,204.73	13.67	2	450.00
Nicollet.....	230.00	13	.50	20	439.50	3.32	1	110.00
Nobles.....	55.90	16.10	1.00	80	2,656.89	14.16	1	90.00
Norman.....	25.00	10	1.67	30	640	6.67	1.31	25.00
Olmsted.....	111.00	9	5.00	15	320	18.75	1	50.00
Otter Tail.....	110.00	5	.63	40	1,916.28	8.00	1	550.00
Pine.....	13.35	1,360	.46	120	3,423.69	1.58	40	5.00
Pipestone.....	1,000.00	100	6.25	200	713.46	11.42	1	10.00
Polk.....	120.00	5	.90	404	3,400	2.00	1	20.00

TABLE VII.—Continued.

COUNTIES.	Maximum price paid per acre, for tract of five or more acres.	Number of acres sold at maximum price.	Minimum price paid per acre.	Number of acres sold at minimum price.	Maximum size of tract, acres.	Price paid per acre for maximum tract.	Minimum size of tract, acres.	Highest price paid per acre for minimum size of tract.
Pope.....	\$57.69	26	\$3.00	40	960	\$5.21	1	\$50.00
Ramsey.....	4,000.00	5.53	15.00	40	240	83.33	1	10,000.00
Redwood.....	100.00	5	2.34	256.36	796.14	7.98	1	150.00
Renville.....	400.00	5	1.87	40	440	6.20	2	17.50
Rice.....	590.55	5.08	1.00	50	599	15.53	1	675.00
Rock.....	113.63	880	3.12	160	880	113.63	1	125.00
St. Louis.....	3,200.00	10	.84	160	10,657.64	20.00	1.25	750.00
Scott.....	100.00	79	3.75	160	213	23.47	1	40.00
Sherburne.....	70.00	10	2.50	120	365	959.00	1	600.00
Sibley.....	50.00	200	2.75	72.66	489	10.42	1.25	240.00
Stearns.....	75.02	13.33	1.25	160	680.56	4.41	1	160.00
Steele.....	108.00	5	2.93	120	324	21.60	1	5,000.00
Stevens.....	37.72	817.09	2.50	40	817.09	37.72	4.20	27.38
Swift.....	25.00	172	1.88	80	960	5.21	1	5.00
Todd.....	80.00	5	1.09	160	2,788.69	8.00	1	30.00
Traverse.....	23.61	33.88	2.50	40	640	3.00	5	10.00
Wabasha.....	62.50	8	1.58	9.50	358	24.00	1	50.00
Wadena.....	50.00	20	1.00	1,515.83	2,773.39	2.03	1	20.00
Waseca.....	52.00	50	1.54	6.51	295.31	23.70	2	562.00
Washington.....	200.00	25	2.69	74.30	200	26.50	1	250.00
Watonwan.....	45.00	5	5.50	160	1,478.96	11.64	1	15.00
Wilkin.....	20.45	11	1.80	40	940.73	13.98	9	6.66
Winona.....	214.28	7	3.12	80	560	15.61	1	1,200.00
Wright.....	66.66	9	3.50	20	200	15.00	1	40.00
Yellow Medicine.....	800.00	10	1.25	80	640	7.81	1	20.00







FOURTH BIENNIAL REPORT

OF THE

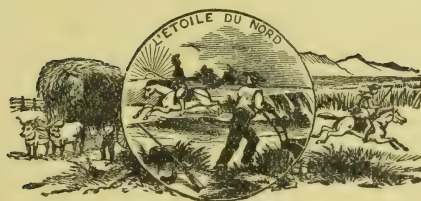
MINNESOTA

STATE DAIRY AND FOOD

COMMISSIONER.

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Transmitted to the Legislature of 1893.



MINNEAPOLIS:  
HARRISON & SMITH, STATE PRINTERS.  
1892.

## Minnesota State Dairy and Food Commission.

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A. K. FINSETH,	-	-	-	-	Commissioner.
J. A. LAWRENCE,	-	-	-	-	Assistant Commissioner.
W. W. RICH,	-	-	-	-	Assistant Commissioner.
A. H. BERTRAM,	-	-	-	-	Secretary.
W. S. EBERMAN,	-	-	-	-	Chemist.
DR. CHAS. W. DREW,	-	-	-	-	Chemist.
H. A. HOKEMEIER,	-	-	-	-	Inspector.
P. W. WILDT,	-	-	-	-	Inspector.
J. V. WILSON,	-	-	-	-	Inspector.
E. B. WILLIAMS,	-	-	-	-	Cheese Instructor



## REPORT OF THE DAIRY AND FOOD COMMISSION.

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*To the Governor and the Legislature of the State of Minnesota :*

In compliance with a provision of a law of this State requiring the several governmental departments of the State to make reports, either annually or biennially, to yourself and the State legislature relative to the work of said departments, together with the receipts and disbursements of the same, I hereby submit to you the fourth biennial report of this department, covering the biennial period ending July 31st, 1892. In compiling this report, permit me, by way of explanation, to state, that while this department has performed double the amount of work of any former biennial period, have visited more towns and villages throughout the State, and have been thoroughly on the alert to detect and punish fraud in any of the articles contemplated in our laws, yet it is my aim to present it in a more condensed and succinct form than has been the custom heretofore, thereby enabling those interested in its perusal to arrive at the results accomplished without the necessity of wading through columns and pages of uninteresting and dry statistics, yet at the same time making it fully as comprehensive and instructive as its importance demands.

I received my commission as State Dairy and Food Commissioner on the 5th day of January, 1891, and at once entered upon the duties of my office. After familiarizing myself with detail work of the department, and informing myself thoroughly on all laws governing the same, I at once gave it my personal supervision. My efforts were chiefly directed in a desire that no time should be lost to the department, and that no interim should intervene between the laying down of the official duties of my efficient predecessor, and of my assuming them.

The work of this department since my appointment has been most thorough. I have waged a relentless and uncompromising warfare on all spurious and illegal dairy and food products

and can report a better condition of the markets of the State than has obtained at any time since the organization of the Commission, as will be seen by accompanying tables. In the prosecution of our work we have at times met with serious and stubborn opposition to the enforcement of the law, but almost as invariably the laws have been vindicated in our courts, and the defendants having received a taste of compulsory education in the matter, are now to be found in the ranks of the "wiser and better."

In the prosecution of the work of this department, I have had the hearty co-operation of my able and zealous assistants, and to them is due, to a great degree, the excellent results attained.

In addition to the laws entrusted to this department for enforcement at the time of my appointment, the legislature of 1891, wisely enacted several others of a very important nature, which were enforced by me without any additional appropriation from the State, besides making some needed amendments to those already in force. Those passed at the last session were, 1st. An act relating to the sale of imitation butter. This act prescribes that any article sold in imitation of butter, and not made wholly from cream, shall be colored a bright pink, and provides a sufficient penalty for the violation of the same.

2d. An act in relation to the sale of lard and lard compounds and substitutes, and of foods prepared therefrom, to prevent fraud and to preserve the public health. This act requires that all substances sold on the markets as lard, and not made wholly from the pure fat of the hog shall be branded as "lard compound" or "lard substitute," and all foods prepared with the same at hotels, restaurants, etc., shall be advertised on bills of fare, and also conspicuously posted on the walls of the dining rooms. But we will treat of this more fully later on. In taking up the several articles that come within our jurisdiction, I will first call your attention to the subject of

#### MILK.

This article of food is, without doubt, more generally used than any other coming under the jurisdiction of this department. It not only enters largely in the preparation of our daily foods, but is also used largely as a beverage, during the warm months, at our tables. Its most important mission, however, is in supplying the babes of the land with good, wholesome, nourishing food; more especially is this the case in the

cities. It is, therefore, of the utmost importance that the milk supply should be furnished in all its purity, from none but healthy animals, and it should be most jealously guarded from the time it is drawn from the cow until it is in the hands of the consumer, that it may at no time be exposed to the many contaminating influences of which it is such a ready agent. The existing laws are framed with this end in view. Milk cannot be legally sold upon the markets of the State that contains less than three and one-half per cent of butter fats. The law also requires that all vendors of milk shall pay the small sum of one dollar to the State Dairy and Food Department, and procure a license for the sale of the same, in all cities of over two thousand inhabitants. This is not done for the purpose of deriving a revenue, but more for the purpose of securing the name and location of the milkmen, so that their premises may be more readily found by our inspectors, and the true condition ascertained of the stock and barns, with reference to health and sanitary environments.

Owing to the strict surveillance of the work in this direction, the standard of the milk throughout the State has been steadily improving in quality, and each succeeding year notes a marked change for the better. Our inspectors visit the cheese factories and creameries throughout the State, and collect samples of milk delivered at those places, for analysis, which method has been attended with good results.

The only true method for the creameries and cheese factories to adopt, in order to get value received, is to buy their milk on the test plan; that is, to submit each patron's milk to a test, and pay for it in accordance with its value in fats, taking the State standard of three and one-half per cent. for a basis. For instance, if a patron furnishes milk that tests above the standard established by law, he should receive correspondingly more for his produce, and vice versa. If this plan was strictly adhered to, it would result in the farmer disposing of his poor cows and replacing them with a higher type of dairy stock, and a much higher grade of dairy products would naturally follow.

In perusing the tables of milk analyses, do not confound the analyses made by the inspectors with those of the chemists of the department that will follow later on. The inspectors give all milk samples a preliminary test, using the "Babcock" milk test, and the samples here referred are those that come up to and exceed the State standard. Those samples that do not come



up to the requirements of the law, are turned over to the chemist and by him submitted to a complete chemical test; therefore the samples analyzed by the chemists represent but a small fraction of the department work in this line.

#### BUTTER.

This article of diet, is perhaps the most abused of any product of the farm. On the majority of farms throughout the State, it is not looked upon as one of the principal sources of revenue, but merely the surplus, over and above that required by the family, is sold or traded at the stores by the housewife as her portion. By not making it one of the principal branches, it is performed in a careless and perfunctory manner, and as it is considered of such minor importance, the necessary outlay for improved machinery and apparatus, so essential to the production of a good article, is withheld, and a conglomerate mass of butter fats, salt and butter milk is placed upon the markets in various shapes and unblushingly called "butter".

Butter making is one of the arts, and might very appropriately be placed upon the list of "lost arts" so far as it applies to the average farmer. But since the advent of the creamery in our midst, placing a uniform grade of butter on sale, it has become necessary to produce a higher grade of dairy butter in order to prevent being superseded by the product of the creamery; and it is with pleasure that a decided improvement is plainly to be seen. The improved quality of our butter is largely due to the deep setting process of raising the cream, which has largely supplanted the old-fashioned milk pan, which has assumed its proper place among the relics of the past age.

Cleanliness in the handling of milk and cream is one of the most important requisites to the making of a good article of butter, and too much care cannot be taken in this direction. Milk, from the time it is drawn from the cow until it is churned and packed in jars, is susceptible to all odors and taints; it is therefore highly important that it should, at all stages, occupy a pure atmosphere. Pure water for the cows is another necessary adjunct. There is no reason why Minnesota with her fertile soil, pure air and water and nutritious grasses, should not occupy a position as a dairy state among her sister states, and the time is rapidly approaching when she will assert her rights in this direction.

The present state laws make no discrimination with regard to the different qualities of butter found upon our market, and the commissioner cannot condemn an article of butter, no matter how vile or rank, if it is proven to be made from pure cream, and that no adulteration whatever has entered into its composition; therefore the consumer must judge of its quality and the quality governs the price. Having casually touched the butter question, I will now call your attention to that of

#### CHEESE.

This branch of industry is, at the present time, comparatively in its infancy. It is but a few years since cheese making in Minnesota became of sufficient importance to attract public attention. But since it has been recognized by our state legislature, and protection vouchsafed it, by the enactment of stringent laws prohibiting the sale of low grade and filled cheese of other states, within our borders, the cheese industry of this State has received an impetus which has resulted in placing it in an enviable position, and to-day, cheese bearing the brand "Minnesota State Full Cream Cheese," demands a good price on our markets, and its brand is a sufficient guarantee of its purity and excellence.

This department has taken a deep interest in the prosperity of this branch of Minnesota's material welfare, and proffers it all the encouragement and assistance consistent with the existing laws governing the same.

Our inspectors visit all cheese factories and creameries at stated periods, and take samples for analysis of all milk delivered by the patrons, as it is delivered. The patron furnishing skimmed or watered milk is at once notified by the department; a second offense means prosecution, hence the first notice is usually sufficient. Therefore when the factories receive milk in its natural purity, the product of the same must necessarily be uniform, with reference to richness.

Heretofore the factory cheese of this State has not been of a uniform texture, while it has been perfectly satisfactory with reference to its other qualities, yet its keeping qualities varied with its manufacture. Two years ago I decided that the only way of overcoming this serious defect, and placing Minnesota cheese on an equal footing with the product of other states, that it would be necessary to appoint a competent person, one thoroughly informed regarding the latest and most approved methods of making cheese, to visit the various factories

throughout the State and instruct the cheese makers in the matter. I accordingly did so, and added to my office force, that of Cheese Instructor, who is engaged for the period of five months each year (or during the cheese making season). The result has been very gratifying and has greatly passed my expectations. The department has received communications from the factories through the State, highly commending my action in the matter, and report very flattering results; and the product of the factories bear very convincing evidence of the efficiency of the work in this direction.

The law requires that all cheese must contain not less than 40 per cent. of fats to total solids, in order to pass as full cream cheese, in order to be eligible to bear the state brand, and the law specifically stipulates that all such cheese must be branded "State of Minnesota, Full Cream Cheese." All cheese containing less than 40 per cent. of fats to total solids will be adulterated, and parties using the Minnesota brand on such product will be liable to prosecution. Since the cheese industry has received the encouragement and protection our state legislature has given it, a very marked improvement has been made and the samples of Minnesota cheese submitted to our chemists for analysis, have, as a rule, tested 50 per cent. of fats to total solids, instead of 40 per cent., the minimum required by law and to-day there is a good demand for the product of our creameries and cheese factories from all parts of the country. It has gained a name and that name has found for it a market. This condition of things I attribute to wise legislation. While our laws have done much for the encouragement of this industry there yet remains much more to be done before the good work will be satisfactorily completed.

The dairy interests of this State are rapidly forging to the front and the time is near at hand when it will be the leading industry. Wheat raising will gradually decrease, and diversified farming will take its place. The especial adaptation of the State of Minnesota to this branch of business reduces the matter to a certainty.

We should, however, until, at least, it becomes strong and deeply rooted and able to care take of itself, guard its interest jealously and give it all the encouragement and protection with the aid of wise legislation that lies in our power. "Eternal vigilance" in this matter is our only safety.



## OLEOMARGARINE.

The sale of this villianous compound in the State of Minnesota is at the present time very limited, and its sale is confined to the lumber and mining camps at the extreme northern part of the State. The supply comes principally from Wisconsin, where no law exists preventing its sale.

This department has been unremitting in its efforts to prevent its gaining a foothold within the border of the State, but has been handicapped to a certain extent, by reason of certain provisions of the Inter-State Commerce law, with reference to the "original package" clause, whereby packages in transit and unbroken packages cannot be seized, though it properly comes within the police surveillance of the State, leaving us the right to prosecute only the retailer who sells it by the pound.

Early last summer this department mistrusted that small lots of oleo were being clandestinely shipped into the city of St. Paul under cover of darkness. Our inspectors were constantly on the alert and were soon rewarded by tracing some of the stuff to a leading hotel in the city. We immediately began a systematic search, visiting all the hotel and restaurant cellars in the city, and secured several tubs of the stuff, which we seized and took it into our possession. The parties from whom they were taken readily gave up the goods, and plead piteously not to be exposed, as it would result in great injury to their business, if their patrons mistrusted that oleo was used on their tables or in the preparation of their foods. Their appeals, however, were of no avail and the matter was thoroughly advertised in the columns of the daily press. The lesson that they learned, though costly, has had a salutary effect, and the department has had no cause to complain of any further trouble in this direction. The same course was pursued at Minneapolis, and was attended with the same results.

## VINEGAR.

This very necessary article has probably received more attention at the hands of the State Dairy and Food department, than any other that comes under its jurisdiction, simply for the reason that it presents a much wider field for operation. There is probably not another article of food upon the market that has been so persistently tampered with and adulterated as has this one article, Vinegar. At the time the present law went into effect, four years ago, it was a matter of very rare occurrence

indeed, that our inspectors found a sample of pure vinegar. But to-day the vinegars upon the markets of our state are a pure and healthy product, while we occasionally find some that are a little off in acidity or solids, yet the market in this respect is in excellent condition.

Colored wine vinegars are not allowed on sale in the State. These colored goods have made us much trouble in times past, owing to the fact of their close resemblance to cider vinegar, which they are intended to imitate. But since the passage of the law prohibiting its sale, our work of cleansing the market of illegal and impure vinegars has been lessened one half.

The most persistent manufacturer of spurious, illegal and impure vinegar is the Alden Vinegar Co., of St. Louis, Mo. These vinegars are placed upon the markets under many names and brands, but on analysis are found to be equally impure, regardless of the brand. Their vinegars have been so thoroughly advertised throughout the State that their sales are very limited indeed, and Minnesota has ceased to be a dumping ground for their "vile concoction" and the name "Alden" that so proudly occupied the place of honor on the barrel heads, is supplanted by a big red "A," the name having become in such bad odor throughout the State.

Below find a characteristic letter from the "Alden Co." to one of their customers in this state in reply to a letter to them stating that the vinegar of their manufacture, in his possession was condemned by the State Dairy and Food department.

ST. LOUIS, MO., June 27th, 1892.

F. M. ——— & Co., ———, MINN.

DEAR SIR:—We are somewhat surprised to receive your letter of the 22d inst. You bought some vinegar from us nearly seven months ago, and now you write us a letter and talk to us about your law.

If you wished to make reclamation about our property, or told us about your law, you should have done so ten days after you got the goods. You have had the goods in your house and possession seven months and that settles it. Our vinegar is absolutely pure, perfectly made, and is all right. and we enclose you our pink circular, whereby you will see that our vinegar is well endorsed. We make, ship and bill our vinegar under the law of the State of Missouri, which is as big and as good as the State of Minnesota, as we believe.

We obey the laws of the State of Missouri and have nothing to do with your State law, and don't intend to have, and don't you forget it.

Yours very respectfully,

ALDEN VINEGAR CO.

It has been the custom of the "Alden Vinegar Co." in order to place their goods on the maket, to give extra long time, at a reduced price, more especially has this been the case since the pure food laws have gone into effect. The invoice above referred to had not been placed on sale until our inspector had

procured samples of the same and our chemist had analyzed them. The following is about the way the Alden vinegar shows up on a chemical analysis:

Number of samples 3,968, laboratory number 2,396.

*Brand*.—Sample extra pure Jeniton vinegar—Alden Vinegar Co. Analysis, acetic acid by weight 3.20, deficient 1.3 per cent. Solid residue, .80, deficient 1.2 per cent.

*Remarks by Chemist*.—Combination, glucose vinegar, deficient in acidity and not as represented to inspector; "illegal."

Signed W. S. EBERMAN, Chemist.

From the above analysis you can form a partial idea of the dastardly class of goods that this firm flooded our markets with. Other vinegar manufacturers have tried to, and have succeeded very well in complying with the provisions of our laws, and are to-day our firmest friends, while the Alden Co. persist in their nefarious and illicit business, and seek to force their goods upon our market rather than to correct their quality and do an honest and legitimate business. They have sent us numerous letters threatening this department with prosecution for advertising the true character of their goods; which course only resulted disastrously to them, and they stand in our State to-day, the most thoroughly advertised manufacturers of spurious vinegars that ever found lodgement on the markets of the State.

#### BAKING POWDER.

Regarding baking powders, the law regulating the sale of the same has been in force for about four years, and the results attending its enforcement have been very satisfactory to this department.

The law requiring alum powders to be so branded, has been pretty generally complied with. We have been compelled to resort to the law on a number of occasions in order to the more firmly impress upon the minds of some unprincipled or unscrupulous vendors, that laws were made to be obeyed. And now the merchant, as well as the general public, are pretty well informed on the law governing this commodity.

Before the enactment of the law requiring that all baking powders containing alum should be plainly marked "this baking powder contains alum," pure and honest baking powders were brought into competition with the adulterated goods, and many were deceived thereby; as all powders were warranted pure, and the purchasers not being chemists were none the wiser. But now things have changed, and goods of this character are sold on their merits, and every one knows



just what he is buying. While the law does not forbid the sale of alum powders, it does demand that all baking powders shall be sold under their true character for what they really are.

#### LARD.

On taking up the subject of food adulteration, I will state before going farther, that I will simply call attention to the present condition of the markets of the State with reference to them, and will refer you to the reports of my chemists, which will follow, for the details, regarding their adulterants, etc., and the condition in which we find them.

Before the enactment of the present lard law, a "lard substitute" found its way to our markets, that for a time bid fair to supplant genuine lard. This compound consisted principally of cotton-seed oil and stearine. It was very white, and was placed in the hands of the retailer at a much lower figure than genuine lard. Its general appearance was in its favor, and the general public might be easily deceived thereby. While it might be substituted for lard to a certain extent, yet it would not, I think, recommend itself for general use in all culinary departments in the preparation of foods, as foods prepared with this substance soon become strong and rancid and would fall far short of giving entire satisfaction. The law now in operation does not prevent its sale, but it requires that it be sold for what it really is. The article must be plainly branded "lard substitute" or "adulterated lard". The retailer must give the purchaser a certificate stating that the article is "lard substitute" or "adulterated lard", together with its formulæ. Hotels and restaurants using the same in the preparation of food, must state on their bills of fare, and on notices conspicuously posted in their dining rooms, that "lard substitute is used here in the preparation of food", this has the desired effect of banishing it from general use, and consequently there is no occasion of the purchaser being swindled, yet at the same time if any person prefers it to pure lard, there is no law preventing his enjoying that privilege. But as stated above, it has not entered into anything like general use and as long as the provisions of the law are complied with, we have no fears for the genuine article.

In conclusion I would most respectfully make a few recommendations to our present legislature. The laws placed in our hands for enforcement have received our full attention, and we are able at this time to make a favorable report of such

dairy and food products as were entrusted to us. But the good work should not stop here, but instead, a wider field should be opened to us, and this can only be done by the authority of the legislature. By judicious management and economy, the present appropriation for the use of this department, is sufficient for the enforcement of the laws now in existence, therefore the passage of any additional laws, giving us a more extended work, should be accompanied by a sufficient appropriation for their enforcement. First among the products of this State to which I will call your attention, is that of

#### HONEY.

This article of the dietary which is so generally known for its pleasant saccharine qualities, has received but a limited amount of attention from the Commission. Not because honey was considered by this department above suspicion of being adulterated, but owing to the fact that it did not come within the jurisdiction of our law.

Our State furnishes an excellent article of honey, and a goodly number are engaged in the business of bee-keeping. Another matter in this connection is well worthy of notice; a large amount of capital has within a few years been invested in apiaries.

The following figures taken from the annual report of the Commissioner of Statistics fully illustrate the rapid growth of the honey industry in our State:

Number of hives in 1893.....	22,063
Number of hives in 1873.....	10,376
Increase in twenty years.....	11,687
Number or pounds of honey in 1893.....	243,466
Number of pounds of honey in 1873.....	134,276
Increase in twenty years.....	109,190

While we recognize the worth of the pure Minnesota product, yet there is much honey on the market that is spurious and adulterated. This evil is on the increase, and to-day it is a serious problem which confronts the men who desire to produce a pure article of honey. It is therefore a matter for our serious consideration, and in order that this important industry may receive a stimulus, it is incumbent upon the legislature to enact laws that will afford it the necessary protection and encouragement its importance demands. In all matters of food we cannot exercise too great care in denouncing the spurious and encouraging the genuine.

## COFFEE.

Another article, and a most important one, we would next call attention to is that of coffee. What is more refreshing and invigorating than a cup of good coffee? Yet how seldom it is our privilege to enjoy one. There is very little of the ground article that is on sale throughout the country that is pure. Ground coffee is more easily adulterated than the unground or whole coffee. Yet whole coffee is not free from adulteration. Parties are at work in some of the eastern states, gathering old coffee grounds, and after drying and grinding them to a fine powder, after which they mix it with rye flour into a dough and repress it in molds in the shape of the coffee berry, and this fraud passes unnoticed except under the closest scrutiny. This article is sold to unprincipled merchants at 4 cents per pound, and mixed with the genuine coffee; and yet you will wonder how it is that your coffee is flat and unsatisfactory, and the delightful aroma lacking. We would most respectfully ask that the legislature look into the matter, and assist us in driving this vile fraud from our State by wise legislation. It is certainly a matter of grave importance and demands our immediate attention.

## SPICES,

The adulteration of all kinds of spices has reached a point that can be tolerated no longer. Something must be done, and that soon. Pure spice of any kind is an article rarely seen upon our markets. This evil grows as the years roll by. It is only a few years since the adulterations have assumed grave magnitude. We will not go into the details on this article, but will call your attention to our chemist's report in another part of this report and you can then form some idea of the character of the vile stuff you take in your system and yet wonder how it is that you do not feel well. Legislation is also most urgently demanded in this matter and we earnestly pray that you will see the matter in its true light, as we have been enabled to do.



## FINANCIAL STATEMENT, YEAR ENDING JULY 31, 1891.

1890.	NAME AND OFFICE.	Compensation.	Traveling expenses.	Purchases.	Postage.	Express and Livery.	Telegrams.
August.....	A. H. Bertram, Secretary..	\$100.00	\$6.27	\$6.10	\$47.25	\$5.35	.....
	C. W. Drew, Chemist.....	150.00	4.75	9.70	2.00	10.75	\$ .35
	H. A. Hokemeier, Insp'r..	75.00	.....	.....	.....	.....	.....
	F. W. Ives, Inspector.....	104.38	97.23	2.48	.60	.....	.60
	J. A. Lawrence Asst Com'r..	125.00	.....	.....	.....	.....	.....
	W. S. Eberman, Chemist...	150.00	.....	.....	.....	.....	.....
	H. C. Howard, Ass't Com...	150.00	.....	.....	.....	.....	.....
	R. G. Rew, Inspector.....	83.33	.....	.....	.....	.....	.....
September..	H. A. Hokemeier, Insp'r..	75.00	49.72	21.24	.....	.....	.....
	A. H. Bertram, Secretary..	100.00	.....	.....	15.00	.....	.....
	W. S. Eberman, Chemist...	150.00	.....	.....	.....	.....	.....
	J. A. Lawrence, Ass't Com...	125.00	.....	.....	.....	.....	.....
	H. C. Howard, Ass't Com...	150.00	49.80	11.85	6.00	14.00	.....
	R. G. Rew, Inspector.....	83.33	36.55	.....	.....	.....	.....
	C. W. Drew, Chemist.....	150.00	.....	.....	.....	.....	.....
October.....	A. H. Bertram, Secretary..	100.00	.....	.....	10.00	.....	.....
	F. W. Ives, Inspector.....	200.00	147.40	8.29	2.09	.65	.85
	W. J. Ives, Com'r.....	.....	150.70	36.50	8.20	11.55	6.75
	C. W. Drew, Chemist.....	.....	2.50	6.15	1.00	3.50	.....
	H. A. Hokemeier, Insp'c'r..	100.00	.....	.....	.....	.....	.....
	H. R. Howard, Inspector...	300.00	24.20	4.35	3.75	7.00	.....
	H. C. Howard, Ass't Com'r..	150.00	24.50	7.05	2.00	7.50	.....
	J. A. Lawrence, Ass't Com...	125.00	.....	.....	.....	.....	.....
	W. S. Eberman, Chemist...	150.00	.....	.....	.....	.....	.....
	R. G. Rew, Inspector.....	83.33	.....	.....	.....	.....	.....
November..	C. W. Drew, Chemist.....	300.00	1.00	7.30	2.00	.85	.....
	R. G. Rew, Inspector.....	83.35	2.80	8.97	.28	.....	.....
	W. S. Eberman, Chemist...	150.00	2.50	1.75	.....	.....	.....
	H. A. Hokemeier, Insp'r...	75.00	18.30	3.38	.....	.80	.....
	J. A. Lawrence, Ass't com...	125.00	10.20	2.00	2.75	3.50	.75
	A. H. Bertram, Secretary..	100.00	.....	.....	.....	.....	.....
	H. C. Howard, Ass't Com'r..	150.00	34.20	11.95	4.00	.....	.....
	H. R. Howard, Inspector...	100.00	.....	.....	.....	.....	.....
December...	A. H. Bertram, Secretary..	100.00	.....	.....	65.00	.....	.....
	H. A. Hokemeier, Insp'r...	75.00	6.25	17.80	.....	.....	.....
	J. A. Lawrence, Ass't Com...	125.00	18.59	5.00	3.25	3.10	.50
	C. W. Drew, Chemist.....	150.00	.50	11.40	.....	2.00	.....
	R. G. Rew, Inspector.....	105.49	27.55	18.70	.50	.....	.....
	H. R. Howard, Inspector...	126.64	21.86	5.05	3.60	28.50	.....
	H. C. Howard Ass't Com'r..	150.00	36.45	4.60	5.00	7.50	.....
	F. W. Ives, Inspector.....	200.00	23.42	13.97	2.10	1.30	1.15
	W. S. Eberman, Chemist...	150.00	.....	.....	.....	.....	.....
1891.							
January.....	F. W. Ives, Inspector.....	50.00	35.28	10.14	1.80	1.35	.35
	H. A. Hokemeier, Insp'r...	75.00	21.78	11.95	.22	.25	.30
	C. W. Drew, Chemist.....	.....	7.10	2.25	2.50	.....	.....
	W. W. Rich Ass't Com'r...	83.33	8.35	15.95	3.00	.35	.....
	J. A. Lawrence, Ass't Com...	137.50	14.05	1.00	.75	5.45	.....
	A. H. Bertram, Secretary..	100.00	.....	.....	.....	.....	.....
	W. J. Ives, Com'r.....	525.00	140.95	9.00	1.60	1.75	5.15
	H. C. Howard, Ass't Com...	50.00	42.30	7.80	9.00	5.00	.....
	W. S. Eberman, Chemist...	150.00	.....	.....	.....	.....	.....
	A. K. Finseth, Com'r.....	75.00	.....	.....	.....	.....	.....
	J. V. Wilson, Inspector.....	50.00	.....	.....	.....	.....	.....
February...	W. S. Eberman, Chemist...	150.00	.....	.....	8.75	.....	.....
	P. W. Wildt, Inspector.....	150.00	23.74	6.04	1.00	.....	.....
	C. W. Drew, Chemist.....	150.00	2.20	10.50	3.25	.....	.....
	H. A. Hokemeier, Insp'r...	83.33	10.40	7.26	.....	.....	.....
	J. A. Lawrence, Ass't Com...	150.00	17.55	4.05	6.20	2.35	.85
	J. V. Wilson, Inspector.....	50.00	.....	.....	.....	.....	.....
	A. H. Bertram, Secretary..	100.00	7.50	.75	10.00	.....	1.25
	W. W. Rich, Assistant Com...	125.00	4.05	7.72	5.00	.25	.....
March.....	J. V. Wilson, Inspector.....	150.00	31.75	6.90	.....	.....	.....
	A. H. Bertram, Secretary..	100.00	.....	.....	.....	.....	.....
	H. A. Hokemeier, Insp'c'r..	83.33	.....	.....	.....	.....	.....
	J. A. Lawrence, Ass't Com...	.....	11.85	2.75	3.05	1.70	2.06
	C. W. Drew, Chemist.....	150.00	.....	.....	.....	.....	.....
	P. W. Wildt, Inspector.....	100.00	17.54	9.55	1.10	.85	.....

## FINANCIAL STATEMENT, YEAR ENDING JULY 31, 1891.—

*Continued.*

1891.	NAME AND OFFICE.	Compensation.	Traveling ex- penses.	Purchases.	Postage.	Express and livery.	Telegrams.
April.....	W. S. Eberman, Chemist...	300.00	.20	5.85	4.25	.....	.....
	C. W. Drew, Chemist .....	150.00	2.80	.75	2.80	.....	.....
	W. W. Rich, Ass't Com. ....	125.00	8.45	13.03	3.50	.....	1.50
	J. A. Lawrence, Ass't Com. ....	300.00	4.05	3.35	4.80	3.90	1.25
	H. A. Hokemeier, Insp'r. ....	40.00	15.05	15.39	.....	1.25	.39
	A. H. Bertram, Secretary ..	100.00	9.92	6.25	10.00	.....	.....
May .....	A. K. Finseth, Com'r. ....	300.00	.....	.....	.....	.....	.....
	J. V. Wilson, Inspector .....	200.00	6.10	5.88	.....	.50	.....
	H. A. Hokemeier, Insp. ....	86.66	10.10	6.97	.....	.....	.....
	C. W. Drew, Chemist .....	150.00	.....	.....	.....	.....	.....
	W. W. Rich, Ass't Com. ....	125.00	1.90	6.55	4.00	.80	.....
	A. K. Finseth, Com'r. ....	.....	9.65	.....	.....	.....	1.04
	P. W. Weldt, Insp. ....	100.00	45.55	8.42	1.55	.....	.25
	Warren J. Ives, Com'r. ....	.....	86.05	.....	.20	.....	.90
	A. H. Bertram, .....	100.00	18.40	3.35	20.00	2.20	.50
	J. V. Wilson .....	100.00	.....	.....	.....	.....	.....
June .....	J. A. Lawrence, Ass't Com. ....	150.00	15.75	.35	2.00	.....	.75
	W. S. Eberman, Chemist .....	150.00	.....	.....	.....	.....	.....
	W. W. Rich, Ass't Com. ....	250.00	2.40	28.72	9.50	3.75	.....
	C. W. Drew, Chemist .....	300.00	.....	.....	.....	.....	.....
	H. A. Hokemeier, Insp. ....	123.33	46.60	12.50	.....	1.40	.....
	J. V. Wilson, Inspector .....	100.00	45.38	15.29	.....	1.60	.50
	A. K. Finseth, Com. ....	300.00	.....	.....	.....	.....	.....
	A. H. Bertram, Secretary ..	.....	.....	.....	10.00	.....	.....
July .....	E. B. Williams, Inspector ..	100.00	22.04	.....	.....	7.00	.....
	P. W. Wildt, Insp. ....	100.00	.....	.....	.....	.....	.....
	W. S. Eberman, Chemist .....	150.00	.....	.....	.....	.....	.....
	A. K. Finseth, Com. ....	300.00	17.95	.....	.....	.25	.25
	J. A. Lawrence, Ass't Com. ....	300.00	19.60	8.75	19.20	18.70	3.25
	W. S. Eberman, Chemist .....	150.00	3.44	5.90	1.25	.....	.....
	J. V. Wilson, Insp. ....	100.00	2.00	1.09	.....	.....	.....
	H. A. Hockmeier, Insp. ....	83.33	145.01	12.80	.....	1.40	.86
	A. H. Bertram, Secretary ..	200.00	9.75	5.35	16.00	8.80	.....
	E. B. Williams, Insp. ....	150.00	138.32	.50	.25	.....	.....
	P. W. Wildt, Inspector .....	100.00	4.90	4.15	.....	.....	.15
	C. W. Drew, Chemist .....	100.00	.....	.....	.....	.....	.....
	W. W. Rich, Ass't Com. ....	125.00	.70	11.77	3.00	2.20	.....

## FINANCIAL STATEMENT, YEAR ENDING JULY 31, 1892.

1891.	NAME AND OFFICE.	Compensation.	Traveling Expenses.	Purchases.	Postage.	Express and Delivery.	Telegrams.
August. ....	P. W. Wildt, Inspector. ....	100 00	34.54	10.13	1.60	.75	...
	A. H. Bertram, Secretary. ....	100.00	4.42	.....	21.50	5.35	.75
	J. V. Wilson, Inspector. ....	100.00	.....	.....	.....	.....	.....
	H. A. Hokemeier, Insp. ....	83.33	.....	.....	.....	.....	.....
	A. K. Finseth, Commiss'n'r	150.00	.....	.....	.....	.....	.....
	W. S. Eberman, Chemist. ....	150.00	.....	.....	.....	.....	.....
September..	Chas. W. Drew, Chemist. ....	300.00	.....	.....	.....	.....	.....
	H. A. Hokemeier, Insp. ....	143.33	67.84	1.70	.48	50.25	.25
	W. W. Rich, Ass't Com. ....	250.00	2.30	13.22	9.00	3.55	.....
	J. V. Wilson, Inspector. ....	100.00	88.62	9.70	.50	1.45	.25
	A. H. Bertram, Secretary. ....	100.00	.....	.....	.....	.....	.....
	J. A. Lawrence, Ass't Com. ....	150.00	.....	.....	.....	.....	.....
	E. B. Williams, Inspector. ....	200.00	75.34	.06	.....	.30	.....
	W. S. Eberman, Chemist. ....	150.00	.20	8.15	2.25	.....	.....
	P. W. Wildt, Inspector. ....	100.00	.....	.....	.....	.....	.....
	C. W. Drew, Chemist. ....	150.00	.....	.....	.....	.....	.....
	A. K. Finseth, Commiss'n'r	150.00	8.55	.....	.....	2.25	.....
October.....	J. A. Lawrence, Ass't Com. ....	300.00	10.30	2.25	5.00	5.60	1.50
	P. W. Wildt, Inspector. ....	100.00	.....	.....	.....	.....	.....
	A. H. Bertram, Secretary. ....	100.00	27.72	5.45	4.00	3.45	.....
	H. A. Hokemeier, Insp. ....	100.00	31.40	2.48	.....	.....	.25
	J. V. Wilson, Inspector. ....	50.00	33.75	5.33	.25	.....	.27
	W. S. Eberman, Chemist. ....	150.09	.....	.....	.....	.....	.....
November..	J. V. Wilson, Inspector. ....	100.00	78.91	12.20	.25	.25	.25
	A. H. Bertram, Secretary. ....	100.00	88.53	6.25	3.25	7.25	.25
	W. W. Rich, Ass't Com. ....	250.00	6.50	13.25	10.50	5.00	.....
	C. W. Drew, Chemist. ....	300.00	.....	.....	.....	.....	.....
	W. S. Eberman, Chemist. ....	.....	10.12	6.79	1.50	.....	.....
	P. W. Wildt, Inspector. ....	75.00	.....	.....	.....	.....	.....
	H. A. Hokemeier, Insp. ....	100.00	64.77	7.23	.30	.95	.....
	A. K. Finseth, Commiss'n'r	150.00	.....	.....	.....	.....	.....
	E. B. Williams, Inspector. ....	175.00	121.97	.37	1.26	2.05	1.50
December..	J. A. Lawrence, Ass't Com. ....	.....	44.79	.50	1.25	7.05	1.65
	W. S. Eberman, Chemist. ....	300.00	.....	.....	.....	.....	.....
	A. K. Finseth, Commiss'n'r	150.00	2.35	.....	.....	2.95	.37
	P. W. Wildt, Inspector. ....	125.00	2.85	3.90	4.00	3.75	1.05
	J. A. Lawrence, Ass't Com. ....	200.00	39.64	8.60	2.65	10.40	2.85
	A. H. Bertram, Secretary. ....	100.00	12.16	.75	12.00	2.80	.....
	J. V. Wilson, Inspector. ....	150.00	88.48	9.40	.45	.25	.25
	H. A. Hokemeier, Insp. ....	75.00	.....	.....	.....	.....	.....
	W. W. Rich, Ass't Com. ....	125.00	.....	.....	.....	.....	.....
1892.							
January....	H. A. Hokemeier, Insp. ....	75.00	47.02	3.59	.30	75.00	.25
	W. W. Rich, Ass't Com. ....	.....	2.55	11.75	7.00	2.75	.....
	W. S. Eberman, Chemist. ....	150.00	2.70	2.60	5.00	.....	.....
	A. H. Bertram, Secretary. ....	50.00	.....	.....	.....	.....	.....
	J. A. Lawrence, Ass't Com. ....	100.00	19.30	9.10	2.70	2.80	1.00
	P. W. Wildt, Inspector. ....	75.00	.....	.....	.....	.....	.....
February...	J. V. Wilson, Inspector. ....	100.00	16.00	3.95	.....	.70	.....
	W. W. Rich, Ass't Com. ....	125.00	2.25	14.20	8.00	6.30	.....
	C. W. Drew, Chemist. ....	150.00	.....	.....	.....	.....	.....
	H. A. Hokemeier, Insp. ....	125.00	32.16	.12	.....	2.15	.....
	P. W. Wildt, Inspector. ....	125.00	14.70	6.81	1.30	.25	.....
	A. H. Bertram, Secretary. ....	125.00	9.12	3.15	13.00	2.65	.....
	J. A. Lawrence, Ass't Com. ....	150.00	.....	.....	.....	.....	.....
	A. K. Finseth, Commiss'n'r	300.00	14.85	.....	3.00	2.40	.20
	J. V. Wilson, Inspector. ....	50.00	.....	.....	.....	.....	.....
	W. S. Eberman, Chemist. ....	75.00	.....	.....	.....	.....	.....
March .....	W. S. Eberman, Chemist. ....	225.00	.....	.....	2.00	.....	.....
	A. H. Bertram, Secretary. ....	125.00	23.46	2.15	.....	2.40	.50
	J. V. Wilson, Inspector. ....	100.00	34.20	4.40	.24	5.75	.52
	P. W. Wildt, Inspector. ....	100.00	4.12	2.87	.....	.50	.25
	H. A. Hokemeier, Insp. ....	125.00	35.28	1.80	.....	.....	.....
	C. W. Drew, Chemist. ....	150.00	.....	.....	.....	.....	.....
	W. W. Rich, Ass't Com. ....	250.00	1.10	22.34	5.00	1.00	.....
	A. K. Finseth, Com. ....	150.00	.....	.....	.....	.....	.....
	J. A. Lawrence, Ass't Com. ....	150.00	51.15	2.67	3.75	4.75	4.10



## FINANCIAL STATEMENT, YEAR ENDING JULY 31, 1892.—

*Continued.*

1892.	NAME AND OFFICE.	Compensation.	Traveling Expenses.	Purchases.	Postage.	Express and Livery.	Telegrams.
April.....	J. V. Wilson, Inspector....	\$100.00					
	W. W. Rich, Ass't Com.....	125.00	\$2.60	\$25.47	\$11.00	\$2.85	\$1.00
	H. A. Hokemeier, Inspect'r	100.00	43.25	4.98	.10		
	J. A. Lawrence, Ass't Com.	250.00	9.49	1.30	1.00	1.30	.75
	A. H. Bertram, Secretary.	100.00	20.77	.25	11.00	.60	
	A. K. Finseth, Comm's'ner	300.00	11.10		1.00		
	C. W. Drew, Chemist.....	150.00					
	W. S. Eberman, Chemist....	150.00					
	P. W. Wildt, Inspector.....	100.00					
May.....	A. K. Finseth, Comm's'ner	100.00	90.40				
	W. S. Eberman, Chemist....	150.00	98.55	6.75	3.00		
	R. White, M. D., Vet. Surg	8.00					
	C. W. Drew, Chemist.....	300.00					
	J. V. Wilson, Inspector....	150.00	71.95	1.00		.80	
	H. A. Hokemeier, Inspectr	75.00					
	P. W. Wildt, Inspector....		52.85	1.25			
	W. W. Rich, Ass't Com'snr	125.00	17.20				
	A. H. Bertram, Secretary.	100.00					
June.....	P. W. Wildt, Inspector.....	200.00					
	H. A. Hokemeier, Inspectr	125.00	5.10	3.60			
	A. K. Finseth, Comm's'ner	50.00	14.50		.50	1.20	
	J. A. Lawrence, Ass't Com	150.00					
	J. V. Wilson, Inspector....	100.00	7.30		.80	.30	
	E. B. Williams, Inspector	150.00					
	W. W. Rich, Ass't Com.....	125.00	1.00	7.97	6.00	.75	
	C. W. Drew, Chemist.....	150.00					
	W. S. Eberman, Chemist....	150.00					
July.....	A. H. Bertram, Secretary.	200.00	23.79	.50	125.00		
	H. A. Hokemeier, Inspectr	100.00	114.47	5.14	.55	.25	.25
	J. A. Lawrence Ass't Com	300.00	27.70	8.35	9.25	19.40	7.70
	J. V. Wilson, Inspector....	100.00	6.85	.30		1.15	
	P. W. Wildt, Inspector.....	100.00					
	C. W. Drew, Chemist.....	150.00					
	E. B. Williams, Inspector.	100.00	71.73				
	A. K. Finseth, Comm's'ner	300.00	5.75			.35	
	W. W. Rich, Ass't Com.....	125.00	14.47		5.00	2.50	
	W. S. Eberman, Chemist....	150.00		2.00	11.50		

	Year ending July 31 1891 Salaries.	Year ending July 31 1892. Salaries.
W. J. Ives, Commissioner.....	\$975.00	.....
F. W. Ives, Inspector.....	454.38	.....
H. C. Howard, Assistant Commissioner.....	800.00	.....
H. R. Howard, Inspector.....	526.64	.....
J. A. Lawrence, Assistant Commissioner.....	1,662.50	\$1,800.00
A. H. Bertram, Secretary.....	1,200.00	1,200.00
W. S. Eberman, Chemist.....	1,950.00	1,800.00
C. W. Drew, Chemist.....	1,800.00	1,800.00
A. K. Finseth, Commissioner.....	975.00	1,800.00
H. A. Hokemeier, Inspector.....	958.31	1,183.33
W. W. Rich, Assistant Commissioner.....	833.33	1,500.00
R. G. Rew, Inspector.....	438.81	.....
E. B. Williams, Inspector.....	250.00	625.00
P. W. Wildt, Inspector.....	550.00	1,200.00
J. V. Wilson, Inspector.....	650.00	1,200.00
Salaries.....	\$14,023.97	\$14,108.33
Traveling expenses.....	1,941.77	1,993.79
Purchases.....	676.74	388.85
Postage.....	429.84	383.02
Gas.....	76.51	53.42
Rent, Minneapolis office.....	719.49	708.00
Express.....	244.15	228.40
Fixtures.....	217.74	70.40
Chemicals.....	157.85	110.07
Telegrams.....	35.99	29.32
Printing.....	5.25	.....
Veterinary surgeon.....	18.00	.....
Detective.....	12.25	.....
Cost in court.....	.....	258.40

Total disbursements..... \$18,558.55 \$18,332.00

No. of milk licenses issued for year ending April 30th, 1891, 939.

No. of milk licenses issued for year ending April 30th, 1892, 1,083.

Sept. 22, 1891, W. Greenstein, sale of watered milk; convicted. Fined \$50 and costs.

Dec. 22, 1891, J. O. Bjornstad, sale of colored vinegar as cider vinegar; convicted. Fined \$25 and costs and fine suspended.

Dec. 22, 1891, Grant Bros., sale of colored vinegar as cider vinegar; convicted. Fined \$25 and costs and fine suspended.

Jan. 12, 1892, Knute Aslesen, sale of lard substitute known as cotoleone, without proper label; convicted. Fined \$25.

Jan. 12, 1892, Chas. M. Bassett, sale of food cooked with lard substitute known as cotoleone without furnishing purchaser with card informing him of such fact; convicted. Fined \$25. This and preceding cases were appealed by the manufacturers, N. K. Fairbank & Co., of Chicago, upon the ground that the provisions of law under which the convictions were secured were unconstitutional. The Supreme Court of Minnesota promptly decided in favor of the law and the cases have now been appealed to the United States Supreme Court.

Jan. 28, 1882, Atlantic & Pacific Tea Co., sale of "A. & P." baking powder containing alum without label; plead guilty. Fined \$40 and costs.

Feb. 12, 1892, Peter J. Bell, sale of "Morning Lily" baking powder containing alum, without label. Case dismissed.

Feb. 12, 1892, B. J. Moe, sale of "Liberty" baking powder containing alum, without label; convicted. Fined \$25 and costs.

Feb. 20, 1892, C. A. Haskins, sale of watered milk; convicted. Fined \$25 and costs.

March 11, 1892, Hugh Harrison, sale of "Triumph" baking powder containing alum, without label; plead guilty. Fined \$25 and costs.

March 29, 1892, Anthony Kelly, sale of "Forest City" baking powder containing alum, without label; plead guilty. Fined \$25 and costs.

May 25, 1892, W. Morrissey, sale of skim milk from a can which was not labeled as containing "skim milk;" convicted. Fined \$30.

May 25, 1892, Fred Roberts, sale of skimmed milk as whole milk; convicted. Fined \$20 and costs.

June 9, 1892, C. G. Nelson, sale of milk which had been partly skimmed and watered, as whole milk; convicted. Fined \$10 and costs.

June 24, 1892, Gustav L. Johnson, sale of "Empire Silver Spoon" baking powder containing alum, without label; convicted. Fined \$25 and costs.

July 8, 1892, Geo. R. Newell, sale of "Bon Bon" baking powder containing alum, without label; plead guilty. Fined \$25 and costs.

July 8, 1892, Geo. R. Newell, sale of "Bon Bon" baking powder containing alum, without label; plead guilty. Fined \$25 and costs.

Aug. 4, 1892, Geo. R. Newell, sale of "Mrs. Baker's" baking powder containing alum, without such label as is required by law; convicted. Fined \$50 and costs.

Aug. 10, 1892, J. M. Schouweiler, Wabasha, Minn., selling illegal vinegar, (Alden's Pure Jeniton Vin.); defendant plead guilty. Fined \$5 and costs.

June 3, 1891, R. F. Moorehouse, Stanton, Goodhue Co., Minn., furnishing adulterated milk to Stanton Creamery; convicted. Fined \$25 and costs.

June 16, 1891, W. N. Speece, Minneapolis, Minn., for neglecting to procure a license for the sale of milk in the city of Minneapolis, plead guilty and was fined the costs on promise to procure a license at once.

Sept. 17, 1891, M. J. Woodruff, Empire, Dakota Co., Minn., furnishing adulterated milk to the Hampton cheese factory; case brought to the grand jury, which failed to indict.

Sept. 30, 1891, F. Mathies, Rochester, Minn., furnishing adulterated milk to the Olmsted cheese factory; tried in justice court, plead guilty, fined \$25 and costs.

Sept. 30, 1891, August Templeman, Oronoco, Steele Co., Minn., furnished adulterated milk to McCray Bros., at Oronoco, plead in justice court at Rochester and fined \$20 and costs.

Sept. 30, 1891, John Stolp, Oronoco, Steele Co., Minn., furnished adulterated milk to the Orinoco cheese factory; plead guilty in justice court. Fined \$20 and costs.

Sept. 30, 1891, Patrick Kaul, Stones Corner, Olmsted Co., Minn., furnished adulterated milk to the Oronoco cheese factory; plead guilty in justice court. Fined \$20 and costs.

Oct. 15, 1891, P. Larson, Roscoe, Goodhue Co., Minn., furnishing adulterated milk to the Roscoe creamery; defendant plead guilty. Fined \$10 and costs.

Oct. 15, 1891, Charles Dickinson, Roscoe, Goodhue Co., Minn., furnishing adulterated milk to the Roscoe creamery; defendant plead guilty. Fined \$10 and costs.



Oct. 15, 1891, John Kinnerman, Roscoe, Goodhue Co., Minn., furnishing adulterated milk to the Roscoe creamery; plead guilty. Fined \$10 and costs.

Feb. 25, 1892, Peter Fritz, St. Paul, Minn., furnishing adulterated milk to customers, case taken before grand jury, which failed to indict.

March 29, 1882, Peter Nelson, Stillwater, Minn., furnishing adulterated milk to customers; plead guilty. Fined \$15 and costs.

March 22, 1892, Annie Stussi, Stillwater, Minn., furnishing adulterated milk to customers; plead guilty. Fined \$10 and costs.

The following seizures of oleomargarine were made by the department, and is now in cold storage awaiting an order of the court for the sale of the same:

Feb. 24th, 1891, A. Wright, Minneapolis, 5 boxes and 3 tubs.

March 6th, 1891, M. Y. Bridges, St. Paul, 43 pounds.

March 6th, 1891, S. Steinberger, St. Paul, 44 pounds.

March 6th, 1891, W. N. Webster, St. Paul, 1 broken package.

March 6th, 1891, Stephen Burns, St. Paul, 37½ pounds.

March 6th, 1891, C. Davinson, St. Paul, 1 broken package.

March 6th, 1891, J. Masson, St. Paul, 1 broken package.

March 6th, 1891, B. Monroe, St. Paul, 1 broken package.

March 12th, 1891, Holmes hotel, Minneapolis, 160 pounds.

Nov. 12th, 1891, W. T. Wheaton, Duluth, 60 pounds.

Nov. 12th, 1891, M. S. Colson, Duluth, 1 tub.

Nov. 12th, 1891, H. Zick, Duluth, 1 tub.

Nov. 12th, 1891, John Carr, Duluth, 1 tub.

Dec. 1st, 1891, O. F. Strand, West Duluth, 1 tub.

Dec. 12th, 1891, Geo. Lammers, Mora, 100 pounds.

Nov. 12th, 1891, Jas. Sullivan, Duluth, 1 tub.

Dec. 29th, 1891, Nellie Ward, Staples, 2 tubs.

Dec. 29th, 1891, M. J. Paine & Son, Staples, 1 package.

Dec. 31st, 1891, Geo. H. Stratton, Brainerd, 1 broken package.

Dec. 31st, 1891, Rutledge Lumber Co., Kettle River, 5 tubs.

Jan. 23d, 1892, E. Mehl (Ryan hotel), St. Paul, 2 packages.

Jan. 28th, 1892, M. Y. Bridges, St. Paul, 1 broken package.

Jan. 28th, 1892, Mr. and Mrs. E. Lippy, St. Paul, 1 broken package.

Jan. 29th, 1892, Market House restaurant, St. Paul, 1 broken package.

Jan. 29th, 1892, Michael Riser, St. Paul, 1 broken package.

Feb. 1st, 1892, A. H. Selb, St. Paul, 1 broken package.

January 28th, 1891, action was brought against M. Y. Bridges, 414 Jackson st. St. Paul, under chapter 172, general laws of Minnesota, "An act to prevent frauds upon guests and boarders at hotels, restaurants and boarding houses." Case tried before Judge Canty, and thrown out of court on technicalities.

November 12th, 1891, Armour Packing Co., Duluth, kept oleomargarine on sale contrary to law. This department seized 362 tubs and placed the same in cold storage; was recovered by defendants on writ of replevin. Defendants were finally awarded full possession of the same, by reason of violation of certain provisions of the Inter-State commerce law in its seizure.

## SAMPLES TAKEN FOR ANALYSIS

By the department inspectors in the various towns, villages and cities throughout the State and analyzed by the department chemists.

Towns.	Milk.	Butter.	Cheese.	Lard.	Baking Powder.	Vinegar.	Total.
Anoka .....			19			36	55
Aspelund .....						1	1
Austin .....			10	2	4	20	36
Adams .....				4	4	5	13
Albert Lea .....			4		1	11	16
Alexandria .....					1	15	16
Amboy .....			4			9	13
Aldrich .....				2		2	4
Appleton .....		1	4	2	3	12	22
Audubon .....			3	2		2	8
Aitkin .....			3	2		4	9
Atwater .....			8			13	21
Alma City .....			3				3
Ada .....			3	4	1	9	17
Aastad .....			1				1
Acoma .....			1				1
Alden .....						4	4
Bridgeman .....			1	2		3	6
Brownsville .....			2	2		19	23
Browns Valley .....			2	2		9	13
Belle Plaine .....			3		2	9	14
Blue Earth City .....			8	2	2	13	25
Biscay .....			2			1	3
Belgrade .....			2			5	7
Buffalo .....			1	1	1	12	15
Brainerd .....		1	8	6	1	28	4
Brownsdale .....			3	1	5	4	13
Barnesville .....			4	5	1	4	14
Benson .....			1	1		6	8
Bird Island .....			2	1	1	4	8
Breckenridge .....				1		4	5
Blooming Prairie .....			3			3	6
Brownton .....			2				5
Caledonia .....			7		1	53	61
Chatfield .....			2	1		6	9
Cottonwood .....			2	2		4	8
Canton .....			6	4		7	17
Cokato .....			4	1	1	12	18
Crookston .....			4	6	1		11
Carver .....			3				3
Chaska .....			4		1		5
Clear Lake .....	1	1	3			4	9
Carleton .....			3		2		5
Cloquet .....			4	2		5	11
Campbell .....						1	1
Cannon Falls .....	15		2			8	25
Claremont .....			2	2	2	5	11
Dundas .....			5			23	28
Dawson .....			5		1	10	16
Duluth .....	7	10	36	14	12	127	206
Detroit .....			10	5		11	26
Dresbach .....			1	2		2	5
Delano .....			3			17	20
Dodge Centre .....			4	2		12	18
Dexter .....			2		1	5	8

SAMPLES TAKEN FOR ANALYSIS—*Continued.*

TOWNS.	Milk.	Butter.	Cheese.	Lard.	Baking Powder.	Vinegar.	Total.
Dassel.....			6	1	2	6	15
Dennison.....	16						16
Elbow Lake.....				1		7	8
Elk River.....			3	1		16	20
Eagle Lake.....			3				3
E. St. Cloud.....						3	3
Echo.....						3	3
Elmore.....					2		2
Evansville.....						5	5
Faribault.....			10	3		35	48
Farmington.....			1			9	10
Fergus Falls.....	28		6	6	1	17	58
Fair Haven.....			1	1			2
Frazee City.....			2	3		4	9
Fairmont.....			1	1		6	8
Fountain.....			4	1		2	7
Fulda.....			1	2	2	4	9
Finseth.....	2						2
Gaylord.....			2		1	7	10
Glencoe.....	1				3	16	20
Graceville.....			2			6	8
Glenwood.....			1	2		5	8
Grove City.....			3			8	11
Granite Falls.....			1	2	3	10	16
Grand Meadow.....			3			9	12
Glyndon.....			1			1	2
Goodhue.....			1			3	4
Hancock.....						1	1
Hastings.....				7	1	58	66
Hartland.....			3			3	6
Hanley Falls.....			1		1	3	5
Henderson.....			2	1		9	12
Hutchinson.....			4		4	13	21
Hawley.....			3	3		4	10
Howard.....			4	4		15	23
Houston.....	1	1	5	1		29	37
Hokah.....			4	3	1	9	18
Harmony.....			5			6	11
Harris.....						2	2
Herman.....				1		5	6
Hinckley.....			1	2		2	5
Hector.....			2	2		5	9
Heron Lake.....			1	1		4	6
Hallock.....			2	2		4	8
Heidelberg.....			1				1
Huntley.....			1				1
Hampton.....	1						1
Jackson.....			7			9	16
Jordan.....			3			5	8
Janesville.....			3	1	3	10	17
Kenyon.....			3			9	12
Kasota.....			1			4	5
Kettle River.....		*5					5
Kasson.....			4	3	2	9	18
Lake City.....	1		17	7		44	69
Leroy.....			8	1	2	21	32
Little Falls.....			4	4		19	27



SAMPLES TAKEN FOR ANALYSIS—*Continued.*

TOWNS.	Milk.	Butter.	Cheese.	Lard.	Baking Powder.	Vinegar.	Total..
Le Sueur.....			4			12	16
Lake Crystal.....			5			16	21
Lake Benton.....			5	2		9	16
Lake Park.....			3	2		9	14
Lakeville.....			2	1	1	6	10
Lamberton.....						6	6
La Crescent.....			1			3	4
Litchfield.....	2	2	5	2	2	23	36
Lanesboro.....			3		2	15	20
Lewiston.....			1			6	7
London.....			2				2
Lansing.....			6		1		7
Long Prairie.....					1	7	8
Lemond.....	7					3	10
Luverne.....			3				3
Minneapolis.....	315	83	233	305	66	786	1,788
Minneiska.....				2		6	8
Minnesota City.....			1	2		5	8
Milacca.....			1	1		6	8
Melrose.....			1	1		7	9
Mankato.....	7		20	3	7	53	90
Madelia.....	2		2	1		4	9
Marshall.....			6	1	2	13	22
Motley.....			2	3		3	8
Mendota.....	16			2		3	21
Montrose.....						1	1
Mora.....		2					2
Mabel.....		2	6	3	1	9	21
Milan.....			1				1
Mapleton.....			6		2		8
Mound Prairie.....						1	1
Medford.....			2	2			4
Minneota.....						2	2
Minnesota City.....			1			5	6
Moorhead.....			4	5		25	34
Morris.....			3			8	11
Montgomery.....			1				1
Mnotevideo.....			2	1		7	10
Monticello.....			1			6	7
Norway.....			1				1
Northfield.....	4	1	10	3	1	21	40
New Brighton.....			1				1
Norwood.....						9	9
New Paynesville.....			1			4	5
New York Mills.....			3	1		2	6
New Ulm.....		1	6		2	22	31
North Redwood Falls.....							1
New Richland.....	9		3			6	18
New Trier.....	4		3			1	1
New Prague.....			1			7	8
Olivia.....						2	2
Owatonna.....	1		21	2	5	1	42
Ortonville.....			3	2	1	5	11
Onyota.....			2			2	4
Oakland.....					1	2	3
Princeton.....			7	1		16	24
Plainview.....		1	1	3	1	7	13

SAMPLES TAKEN FOR ANALYSIS—*Continued.*

TOWNS.	Milk.	Butter.	Cheese.	Lard.	Baking Powder.	Vinegar.	Total.
Pine Island.....	8		1			3	12
Paynesville.....			2	3		6	11
Perham.....			2	2		9	13
Park Rapids.....			3	1		4	8
Preston.....			7		2	7	16
Pelican Rapids.....					2	7	9
Pipestone.....			5	2		8	15
Red Wing.....			13	3	1	78	95
Reeds Landing.....			1	2	1	10	14
Redwood Falls.....			8	4	1	14	27
Raymond.....			2				2
Rochester.....			18	7	3	22	50
Royalton.....			3	1		6	10
Rices.....			2	2		7	11
Rock Dell.....			2				2
Renville.....			2		1	6	9
Racine.....						3	3
Rushford.....			4			25	29
Red Lake Falls.....						2	2
Rosemount.....			1	1		4	6
St. Cloud.....	3		19	6	3	82	113
St. Charles.....			3	2	2	14	21
St. Paul.....	215	108	239	160	49	692	1,463
South St. Paul.....		2	1		1	2	6
St. James.....	1		3			4	8
St. Peter.....			8	1	2	24	35
Shakopee.....			4			14	18
Stillwater.....	13		34	6	1	70	124
Sauk Center.....				1		7	8
Sleepy Eye.....			3		2	18	23
Springfield.....			3		3	11	17
South Haven.....						1	1
Staples.....		3	3	3		4	13
Spring Grove.....			1				1
Spring Valley.....			8	1	1	14	24
Stewartville.....			4		2	5	11
Sauk Rapids.....			1	2		9	12
Stanton.....	15						15
Spring Grove.....			3				3
Slayton.....						1	1
Swan Lake.....			1				1
Stephen.....			3	4	1	5	13
Sherburne.....			2	2		7	11
Sandstone.....						2	2
Tracy.....			7			13	20
Taopi.....			1	1		2	5
Taylor Falls.....				2		5	6
Tower.....						2	2
Union Hill.....			1				1
Underwood.....			1	1		2	4
Verndale.....			2	2		6	10
Wabasha.....			6	15	1	30	52
Winona.....			32	23	9	119	183
Weaver.....						1	1
Wilder.....			1				1
Walcott.....						2	2
Waseca.....			6		2	17	25
Worthington.....			2			11	13

SAMPLES TAKEN FOR ANALYSIS—*Continued.*

TOWNS.	Milk.	Butter.	Cheese.	Lard.	Baking Powder.	Vinegar.	Total.
Winnebago City.....			4		2	9	15
Winthrop.....			4		1	10	15
Waconia.....		1	1		1	7	10
Wheaton.....			2			5	7
West Duluth.....	1	1	11	2	2	30	47
Wadena.....			3	2	3	18	26
Willmar.....			9		2	28	39
Whalen.....			1			4	5
Waterville.....			4	1		8	13
Wells.....	2		8	3	2	17	32
West Concord.....	8		1	1		14	24
Wanamingo.....	1		1		1	3	9
Warren.....			2	2			4
Windom.....			3	2	1	12	18
Wykoff.....			2			4	6
Waverly.....				1		9	10
Young America.....				8			8
Zumbrota.....	6			2		11	19
Samples analyzed by W. S. Eberman, chemist.....	354	136	610	319	148	1,855	3,422
Samples analyzed by Dr. C. W. Drew, chemist.....	359	90	692	466	132	2,007	3,756
Total analyzed by Dept....	713	226	1,302	785	280	3,862	7,178
By W. S. Eberman, cream...	16						
By W. S. Eberman, miscellaneous.....	224						

## REPORT OF THE STATE CHEESE INSTRUCTOR.

*Hon. A. K. Finseth, Dairy and Food Commissioner.*

SIR:—I herewith submit my report as State Cheese Instructor and Inspector working under the direction of your department.

In accordance with your instructions my duties as instructor of cheese began May 15, 1891. The territory covered being large, it was deemed advisable when not engaged in the special work assigned me, that I should devote my attention to creameries, also to the taking of food samples etc.

The appointment of a cheese instructor has opened up a new field to the interests of darying in Minnesota.

The season of 1891 may be recorded as the first in which a cheese instructor was employed by the State.

In the special work among cheese-makers it was my endeavor to adopt the most practical methods, which were as near the following as was possible:

I visited each factory and made a personal examination of the entire surroundings, having these objects in view:

(1) As to their sanitary condition, that no cess-pools were allowed in the immediate vicinity.

(2) That the milk furnished by the patrons was of legal requirement, *i. e.* 3.50 per cent. of fat. That no watering or skimming of the milk be allowed. That the cans be kept in proper condition, and the milk pure and wholesome.



(3) To see that all portions of the factory, such as implements used in the manufacture of cheese, were in perfect order.

These I consider the most important requisities to the manufacture of good cheese.

Where deemed necessary, instructions were given to the cheese makers. This work is most essential in order to have a uniform grade of cheese throughout the State.

Without skill and uniformity of make, without exercising judgment in the development of flavors and the curing, the markets, in time, will have become glutted with an unprofitable and unsalable product. Excellence in quality and the highest grade possible, is the standard we hope to obtain for Minnesota Full Cream Cheese. In addition to the duties as already indicated, there were daily reports mailed to your department in St. Paul.

These reports embraced the number of factories visited, the names of the proprietors or managers of the factory, the number of patrons supplying each factory with milk, and the amount of milk daily furnished the factory.

There are in our State over 100 factories. In most of these I have worked, giving the makers the benefit of my experience as a practical cheese maker.

The territory to be traversed in order to reach these 100 factories is great. It extends from the extreme southern limit, bordering on Iowa, to the Manitoba line, or 350 miles north and south; west to the Dakota line, or 200 miles; altogether making an area of 70,000 square miles to be traveled over. The great distance which separates one factory from another is detrimental to the work in which I am engaged.

Many factories require, perhaps, but one visit during the season, while there are others which ought to receive frequent attention, but their remoteness militates against any well organized system of visitation.

In my travels among the various cheese factories of the State, I find, as a rule, both cheese maker and patron very cordial and obliging. In most instances the factoryman is willing and ready to accept and adopt suggestions looking to the improvement in their methods of cheese making. Likewise the patron is alert in all matters pertaining to dairying.

There were some instances in which I found the sanitary condition of the factory bad. Especially was this more apt to be the case in respect to their system of drainage. When, however, these defects were pointed out the owners or managers readily agreed to remedy the evil.

In some factories I found the cheese maker without a thorough knowledge of his work. Where these exceptions occurred, the maker in nearly every instance seemed anxious to learn all that was possible to be learned about cheese making. In fact, as a rule, the cheese makers of Minnesota are an intelligent and progressive class of men. They are desirous of availing themselves of every opportunity, and to have their brands of cheese the most popular and satisfactory there are in the market. There are a large number of cheese makers in our State who are producing a superior article of cheese. Their factories are kept clean, and all the surroundings I found to be in the best sanitary condition.

Lest there be some who might accuse me of favoritism. I here refrain from giving their names.

Among the number inspected I discovered a few patrons who were delivering to the factories milk which was not only sour, but very unclean. In such instances I called the offender's attention to that portion of the law which requires patrons who deliver milk to cheese factories to have the milk pure, sweet and wholesome.

I also endeavored to impress on them the importance of exercising the greatest care at the time of milking, and after the milk had been drawn from the cows. Under no conditions whatever to allow the milk to be contaminated with stable or barnyard odors.

In conclusion I will say, that while we gladly notice the many needed improvements in the system of cheese-making, much yet remains to be done.

I would therefore recommend and urge the following:

That the patrons of factories exercise the utmost care in the handling of milk. That the milk be strained, properly aerated and kept free from all animal odors.

That the proprietors and managers of factories see that their places are so constructed that the cheese may be kept at, as nearly as possible, an even temperature.

That, as far as practical, to attend dairy meetings and conventions. And to subscribe for and read carefully the best dairy literature. In fact, to allow no opportunity to pass whereby they can improve their minds, and to keep thoroughly posted on all progressive measures relating to dairying and cheese-making.

Having thus observed all the best rules, exercised your best judgment and improved every opportunity, your success as a cheese-maker will be assured.

The State of Minnesota abounds in natural advantages that in every way are suited to the needs of the dairyman. We have an excellent climate, pure, living water and nutritious grasses. No better cheese ought anywhere to be made than that produced by our Minnesota factorymen.

Respectfully submitted

E. B. WILLIAMS.

## LIST OF CREAMERIES IN THE STATE AND THEIR LOCATION.

Counties.	Town.	System.	Proprietor or manager.
Anoka	Anoka	Gathered	Co-op. Creamery Co.
Becker	Audubon	Gathered	L. S. Cravath.
"	Detroit	Gathered	Goodrich & Co.
"	Lake Park	Gathered	Wannested & Co.
"	Lake Park	Cooly system	Thos. C. Hawley.
Big Stone	Ortonville	Gathered	Ortonville Cream'y Co.
"	Graceville	Gathered	W. F. Hastings.
Blue Earth	Vernon Centre	Gathered	Vernon Centre Cr'y Co.
"	Mapleton	Gathered	C. G. Spalding.
"	Lake Crystal	Separator	C. H. Davis, secretary.
"	Good Thunder	Separator	
"	St. Clair	Gathered	
Brown	Springfield	Gathered	J. A. Sinclair.
"	New Ulm	Gathered	E. G. Koch.
Carver	Cologne	Gathered	Minn. Creamery Co.
"	Young America	Gathered	Minn. Creamery Co.
"	Norwood	Gathered	Minn. Creamery Co.
Chippewa	Montevideo	Gathered	
"	Granite Falls	Gathered	
Chisago	Rush City	Gathered	Co-operative.
"	Franconia	Gathered	
Clay	Hawley	Gathered	James Glasgow.
"	Moorhead	Gathered	L. Johnson.
"	Ulen	Gathered	
"	Hitterdal	Gathered	
Cottonwood	Windom	Gathered	J. J. Kendall.
"	Mountain Lake	Gathered	John Janzer.
Dakota	Farmington	Gathered	Minn. Creamery Co.
"	Lakeville	Gathered	Minn. Creamery Co.
"	Hastings	Separator	Geo. W. Martin & Co.
"	Auburn		
"	Randolph	Separator	Crescent Creamery Co.
Dodge	Wassioja	Gathered	Guzler Bros.
"	Dodge Centre	Gathered	Crescent Creamery Co.
"	Kasson	Gathered	Crescent Creamery Co.
"	Claremont	Gathered	Claremont Cream'y Co.
"	Hayfield	Gathered	
"	Fair Point	Gathered	Crescent Creamery Co.
"	Kasson	Gathered	Crescent Creamery Co.
"	Berne		Crescent Creamery Co.
"	2 miles from Berne	Separator	W. Moreland, sec'y.
"	2 miles from Oronoco	Separator	
Douglas	Alexandria	Gathered	
"	Osakis	Gathered	Osakis Creamery Co.
"	Brandon	Gathered	
Faribault	Easton	Gathered	Spring Valley Cr'y Co.
"	Wells	Separator	Wells Creamery Co.
"	Elmore	Gathered	Elmore Creamery Co.
"	Minnesota Lake	Separator	
"	Blue Earth City	Gathered	
Fillmore	Rushford	Gathered	Rushford Co-op. Co.
"	Canton		Canton Creamery Co.
"	Chatfield	Gathered	Chatfield Creamery Co.
"	Spring Valley	Gathered	Spring Valley Cr'y Co.
"	Mabel	Gathered	Tollefson & Graham.
"	Fountain	Gathered	W. A. Bolles.
"	Forestville	Gathered	
"	Harmony	Gathered	
"	Whalen	Gathered	
"	Fillmore	Gathered	
"	Preston	Separator	Co-operative.
"	Wilmington	Gathered	Tollefson & Graham.
"	Friberg	Gathered	
"	Peterson	Separator	
"	Spring Valley	2 separators	
Freeborn	Albert Lea	Separator	
"	Alden	Gathered	Alden Creamery Co.
"	Glenville	Sep. and gathered	Glenville Dairy Ass'n.
"	Hayward	Separator	Hayward Creamery Co.
"	Bath	4 separators	
"	Riceland	Separator	Riceland Cr'y Asso'n.
"	Pickere Lake	Separator	
"	Armstrong	Separator	J. H. Converse.
"	Hayward	Separator	M. P. Hanson.
"	Twin Lakes	Separator	
"	Manchester	Separator	Manchester Cr'y Co.
"	Hartland	2 separators	Crescent Creamery Co.
"	Mansfield	2 separators	



## LIST OF CREAMERIES IN THE STATE AND THEIR LOCATION.

—Continued.

Counties.	Town.	System.	Proprietor or manager.
Freeborn.....	Bancroft .....	2 separators.....	N. F. Sandberg.
" .....	Moscow .....	2 separators.....	
" .....	Newry .....	2 separators.....	
" .....	Clover Valley .....	Separator .....	J. V. Wolheuter.
" .....	Clark's Grove.....	Separator .....	J. P. Larson.
" .....	Carleton .....	Separator .....	
" .....	Albert Lea.....	2 separators.....	
" .....	Oakland.....	2 separators.....	
" .....	Hartland.....	2 separators.....	
" .....	Geneva .....	1 separator.....	
Goodhue .....	Zumbrota .....	Gathered .....	Crescent Creamery Co.
" .....	Kenyon .....	Separator .....	Crescent Creamery Co.
" .....	Kenyon .....	Separator .....	Guzler Bros.
" .....	Cannon Falls.....	Separator .....	Crescent Creamery.
" .....	White Rock.....	Gathered .....	H. A. Miller.
" .....	Kenyon .....	Separator .....	Kenyon Creamery Co.
" .....	Stanton .....	Separator .....	Crescent Creamery Co.
" .....	Hader .....	Gathered .....	
" .....	Aspelund .....	Separator .....	Crescent Creamery Co.
" .....	Roscoe .....	Separator .....	
" .....	Spring Creek.....	Separator .....	Crescent Creamery Co.
" .....	Forest Mills.....	Gathered .....	
" .....	Dennison .....	Separator .....	Crescent Creamery Co.
" .....	Fair Point.....	Separator .....	Crescent Creamery Co.
" .....	Berg's Corner.....	Separator .....	Crescent Creamery Co.
" .....	Randolph .....	Separator .....	Crescent Creamery Co.
" .....	Sorenson .....	Separator .....	Crescent Creamery Co.
" .....	Roscoe Centre.....	Separator .....	Crescent Creamery Co.
Grant .....	Elbow Lake.....	Gathered .....	Co-operative.
Hennepin .....	Minneapolis .....	Separator .....	Crescent Creamery Co.
" .....	Minneapolis .....	Separator .....	Minn. Creamery Co.
Houston .....	Caledonia .....	Gathered .....	Handel & Uugs.
" .....	Houston .....	Gathered .....	Houston Creamery Co.
" .....	Spring Grove.....	Gathered .....	Spring Grove Cr'y Co.
" .....	Hokah .....	Gathered .....	Hokah Creamery Co.
" .....	Mound Prairie.....	Gathered .....	
Houston .....	Brownsville .....	Gathered .....	J. Hauke.
" .....	Freeburg .....	Gathered .....	Geo T. Brenner, Sec.
" .....	Spring Grove.....	Separator .....	
Isanti.....	Cambridge.....	Gathered .....	
Jackson .....	Jackson .....	Gathered .....	Jackson Co-op. Co.
" .....	Heron Lake .....	Separator .....	Heron Lake Cr'm'y Co.
" .....	Heron Lake .....	Separator .....	J. D. Wilson.
Kandiyohi .....	New London .....	Gathered .....	Co-operative.
" .....	Willmar .....	Gathered .....	Willmar Butter Co.
" .....	Atwater .....	Separator .....	
" .....	Lake Elizabeth.....	Separator .....	
Lac qui Parle.....	Lac qui Parle.....	Gathered .....	
LeSueur .....	Le Sueur .....	Gathered .....	Minn. Creamery Co.
" .....	Cleveland .....	Gathered .....	Geo. L. Cheadle.
" .....	Kasota .....	Gathered .....	Co-operative.
Lincoln .....	Lake Benton.....	Gathered .....	
" .....	Verdi .....	Separator .....	A. Bergsen.
Lyon .....	Marshall .....	Gathered .....	Marshall Creamery Co.
" .....	Balaton .....	Gathered .....	
" .....	Tracy .....	Gathered .....	
McLeod .....	Hutchinson .....	Gathered .....	Minn. Creamery Co.
" .....	Glencoe .....	Gathered .....	Minn. Creamery Co.
" .....	Sumpter .....	Gathered .....	R. C. Dwinnell.
" .....	Stewart .....	Gathered .....	Co-operative.
Martin .....	Nashville Centre.....	Gathered .....	Sam Bacon.
" .....	Fairmont.....	Gathered .....	J. A. Sinclair.
" .....	Wellcome .....	Gathered .....	
" .....	Sherburne .....	Gathered .....	
Marshall.....	Warren .....	Gathered .....	Warren Creamery Co.
Meeker .....	Litchfield .....	Gathered .....	Litchfield Cream'y Co.
" .....	Grove City.....	Gathered .....	D. D. Danielson.
" .....	Cedar Mills.....	Gathered .....	
Mille Lacs.....	Princeton .....	Gathered .....	C. H. Chadbourne.
Morrison .....	Royalton .....	Gathered .....	Minn. Creamery Co.
Murray .....	Fulda .....	Gathered .....	H. P. Lewis.
" .....	Fulda .....	Gathered .....	A. J. Sinclair.
Mower .....	Rose Creek.....	Gathered .....	Rose Creek Cream'y Co.
" .....	Taopi .....	Gathered .....	
" .....	Waltham .....	Gathered .....	M. Boleau.
" .....	Grand Meadow.....	Separator .....	Farmers' Co-op. Co.
" .....	LeRoy .....	Gathered .....	Spring Valley Cr'y Co.
" .....	Grand Meadow.....	Gathered .....	H. M. Lovell.

LIST OF CREAMERIES IN THE STATE AND THEIR LOCATION.  
—Continued.

Counties.	Town.	System.	Proprietor or manager.
Mower	Lyle	Gathered	A. A. Wilson.
"	Adams	Gathered	Spring Valley Cr'y Co.
"	Red Oak Grove	2 separators	
Nicollet	Kasota Junction	Gathered	
"	Strauss	Gathered	
Nobles	Rushmore	Gathered	Geo. Jay.
"	Adrian	Gathered	
"	Worthington	Gathered	
"	Brewster	Gathered	
Norman	Hendrum	Gathered	A. Lyerdon.
"	Ada	Gathered	Thorp Bros.
"	Rindall	Gathered	Farmers Co-op. Co.
"	Fosston	Gathered	
"	Twin Valley		
Olmsted	Douglas	Separator	Rochester Separat'r Co.
"	Eyota	Gathered	E. S. Henning.
"	Pleasant Grove	Gathered	Pl. Grove Creamery Co.
"	Rochester	Separator	Crescent Creamery Co.
"	Byron	Separator	Crescent Creamery Co.
"	High Forest	2 separators	Farmers Co-op. Co.
"	Viola	Gathered	H. D. Morse.
"	Rochester	7 separators	Rochester Sep. Co.
"	Rock Dell	Gathered	Rock Dell Cr'y Co.
"	Haverhill	Separator	Rochester Sep. Co.
"	Oronoco	Gathered	McCrea Bros.
"	Genoa		
"	Salem, Byron, P. O.	Separator	Rochester Sep. Co.
"	Stewartville	Separator	C. E. Waller.
"	Stones Corner	Separator	Crescent Creamery Co.
"	Marion	Separator	Crescent Creamery Co.
Otter Tail	Otter Tail	Gathered	
"	Pelican Rapids	Gathered	
Pipestone	Pipestone	Gathered	E. A. Rice.
Polk	Fertile	Gathered	LaDue & Co.
"	St. Hilaire	Gathered	St. Hilaire Cr'y Co.
"	Crookston	Gathered	
Pope	Villard	Separator	Villard Separator Co.
"	Lowry	Gathered	Co-operative.
"	Cyrus	Gathered	P. Christianson.
"	Farwell	Separator	
Ramsey	St. Paul	Separator	Crescent Creamery Co.
"	St. Paul	Separator	Martin & Co.
Redwood	Redwood Falls	Gathered	W. H. B. Totten.
"	Lamberton	Gathered	Lamberton Cr'y Co.
Renville	Bird Island	Gathered	Minn. Creamery Co.
"	Olivia	Gathered	Olivia Creamery Co.
Rice	Faribault	Separator	Minn. Creamery Co.
"	Northfield	Separator	Crescent Creamery Co.
"	Richland	Separator	
"	Walcott	Separator	Frank Berry.
"	Dundas	Separator	Crescent Creamery Co.
"	Wheeling	Separator	
"	Dean	Separator	Crescent Creamery Co.
"	Maland	Separator	Crescent Creamery Co.
"	Berg's P. O.	Separator	Crescent Creamery Co.
"	New Chicago	Separator	Crescent Creamery Co.
"	Hazelwood	Separator	Crescent Creamery Co.
Scott	Shakopee	Separator	Jos. A. Zettel.
"	Jordan	Separator	
"	Jordan	Gathered	
Sherburne	Clear Lake	Gathered	Minn. Creamery Co.
"	Elk River	Gathered	Crescent Creamery Co.
"	Santiago	Gathered	Minn. Creamery Co.
Sibley	Henderson	Gathered	Minn. Creamery Co.
"	Arlington	Gathered	Minn. Creamery Co.
"	Winthrop	Gathered	McKay, Nerhoff & Co.
"	Gaylord	Gathered	H. F. Tholes & Son.
"	Gaylord	Gathered	Gaylord Cr'y Co. G.
"	Gibbon	Gathered	Swenson, Manager.
Steele	Owatonna	Gathered	Minn. Creamery Co.
"	Blooming Prairie 2	Gathered	
"	Blooming Prairie	Cooley system	F. D. Holmes.
"	Blooming Prairie	Gathered	Minn. Creamery Co.
"	Pratt	Separator	Pratt Separator Co.
"	Cooleyville	Separator	Berlin & Summit.
"	B'y'r L'ke, Berlin, P. O.	Separator	
"	Steele Centre 2	Separator	
"	Lemond	Separator	

## LIST OF CREAMERIES IN THE STATE AND THEIR LOCATION.

—Continued.

Counties.	Town.	System.	Proprietor or mhnager.
Steele.	Blooming Prairie....	Separator.....	Winona Creamery Co.
"	Bixby.....	Separator.....	
"	Berlin.....	Separator.....	
"	Clinton Falls.....	2 Separators.....	
"	Crane Creek.....	Separator.....	Owatonna P. O.
Stearns.	Sauk Centre.....	Gathered.....	
"	Brooton.....	Separator.....	
"	East St. Cloud.....	Gathered.....	
"	Fair Haven.....	Gathered.....	Co-operative.
"	Belgrade.....	Gathered.....	
"	Richmond. Torah P.O.	Gathered.....	Co-operative.
"	Melrose.....	Gathered.....	
Stevens.	Morris.....	Gathered.....	
Swift.	Benson.....	Gathered.....	
Todd.	West Union.....	Gathered.....	Joel Meyers.
Traverse.	Browns Valley.....	Gathered.....	Browns Valley Cr'y Co.
Wabasha.	Plainview.....	Gathered.....	A. Y. Felton.
"	Weaver.....	Gathered.....	W. H. Hopkins.
"	Hammond.....	Gathered.....	
"	Mazeppa.....	Separator.....	O. D. Ford.
"	Lake City.....	Separator.....	J. J. Dayton.
Wadena.	Wadena.....	Gathered.....	W. E. Baumbach.
Waseca.	Waseca.....	Gathered.....	Minn. Creamery Co.
"	Janesville.....	Gathered.....	Janesville Butter Co.
"	Blooming Grove.....	Separator.....	Bl. Grove Co-op. Co.
"	Morristown.....	Gathered.....	M. A. Goar.
Washington.	Langdon.....	Separator.....	Langdon Butter Co.
"	Stillwater.....	Gathered.....	I. E. Staples.
"	Newport.....	Gathered.....	
"	Forest Lake.....	Separator.....	
Watsonwan.	Madelia.....	Separator.....	Madelia Butter Co.
"	St. James.....	Sep. and gathered..	
"	South Branch.....	Separator.....	South Branch Sep. Co.
"	Lincoln.....	Separator.....	Madelia P. O.
Wilkin.	Rothsay.....	Gathered.....	Rothsay Creamery Co.
Winona.	Pickwick.....	Gathered.....	T. B. Rand.
"	St. Charles.....	Gathered.....	Milo White.
"	Saratoga.....	Gathered.....	Co-operative.
"	Winona.....	Gathered.....	
"	Utica.....	Separator.....	D. W. Bosworth.
Wright.	Monticello.....	Gathered.....	Crescent Creamery Co.
"	Rockford.....	Gathered.....	Minn. Creamery Co.
"	Montrose.....	Gathered.....	Montrose Cr'y Co.
Yellow Medicine.	Granite Falls.....	Gathered.....	



## CHEESE FACTORIES IN MINNESOTA.

No.	County.	Town.	Proprietor and Manager.
47	Becker.....	Frazee City.....	W. G. Chilton.
153	Becker.....	Audubon.....	Sivert Larson.
52	Blue Earth.....	Amboy.....	Amboy Cheese Factory.
107	Blue Earth.....	Mapleton.....	Mapleton Cheese Factory.
140	Blue Earth.....	Eagle Lake.....	
143	Blue Earth.....	Lake Crystal.....	O. F. Jones.
132	Blue Earth.....	Vernon Center.....	J. R. Lovell, Secretary.
147	Blue Earth.....	Lake Crystal.....	Kedloff & Golke.
25	Carver.....	Waconia.....	Sam Trewe.
148	Carver.....	Norwood.....	Gustave Dittmion.
51	Chippewa.....	Milan.....	Thomas Anderson.
38	Chisago.....	Center City.....	I. A. Rice.
53	Cottonwood.....	Storden.....	Charles H. Rapke.
54	Cottonwood.....	Storden.....	Henry Heinemann.
95	Dakota.....	New Trier.....	N. P. Gores.
96	Dakota.....	Hampton.....	Oo-Operative Creamery Co.
5	Dodge.....	Berne.....	Crescent Creamery Co.
28	Dodge.....	Berne.....	Kasper, Audist & Co.
55	Dodge.....	Mantorville.....	John Audvist.
56	Dodge.....	Berne.....	E. & A. Eggir.
57	Dodge.....	Berne.....	George Knobel.
134	Dodge.....	Mantorville.....	J. Denny.
59	Douglas.....	Alexandria.....	John Sheldon.
89	Faribault.....	Huntley.....	A. A. Foucher.
149	Faribault.....	Minnesota Lake.....	P. F. Wendt.
150	Faribault.....	Huntley.....	J. D. Barnes.
34	Fillmore.....	Spring Valley.....	Arthur W. Lyman.
60	Fillmore.....	Spring Valley.....	G. W. Farmer.
139	Fillmore.....	Etna.....	F. Hall & Son.
154	Fillmore.....	Spring Valley.....	John Dullyby.
6	Freeborn.....	Alden.....	A. Johnson.
42	Freeborn.....	Oakland.....	F. J. Sweeton.
61	Freeborn.....	London.....	London Cheese Factory.
8	Goodhue.....	Mazeppa.....	H. Ahnemann.
43	Goodhue.....	Zumbrota.....	N. L. Dickinson.
62	Goodhue.....	Pine Island.....	Crescent Creamery Co.
63	Goodhue.....	Pine Island.....	C. Waters.
64	Goodhue.....	Roscoe.....	Charles Rogers.
110	Goodhue.....	Stanton.....	Norman Daniels.
156	Goodhue.....	Frontenac.....	Charles Luth, President.
66	Houston.....	Hokah.....	Baker Gotfried.
12	Isanti.....	Isanti.....	L. F. Rice.
67	Jackson.....	Brownsburgh.....	Brownsburgh Cheese Factory.
68	Jackson.....	Bergen.....	R. Rucker.
102	Jackson.....	Wilder.....	W. H. Trowbridge.
119	Kandiyohi.....	Raymond.....	Robert Stuart.
123	Kandiyohi.....	Willmar.....	Willmar Cheese Factory.
69	LeSueur.....	Le Sueur.....	George L. Cheadle.
127	LeSueur.....	Waterville.....	George B. Parks.
71	Lyon.....	Balaton.....	Tinkham & Dresser.
137	Lyon.....	Minneota.....	K. Broughton.
36	McLeod.....	Hutchinson.....	Eben Dennis.
97	McLeod.....	Biscay.....	Jack Kennedy.
118	McLeod.....	Sumpter.....	R. C. Dwinnell.
120	McLeod.....	Acoma (Hutchinson P.O.).....	Henry Luten.
72	Marshall.....	Stephen.....	Charles Topper.
141	Meeker.....	Cedar Mills.....	
114	Morrison.....	Belle Prairie.....	B. Doucette.
20	Mower.....	Austin.....	E. B. Williams.
21	Mower.....	Austin.....	E. B. Williams.
30	Mower.....	Leroy.....	John Frank.
109	Mower.....	Austin.....	John A. Turnbull.
138	Mower.....	Lansing.....	Ferdinand Schuett.
151	Murray.....	Fulda.....	L. Coburn.
2	Olmsted.....	Olmsted.....	Crescent Creamery Co.
3	Olmsted.....	Byron.....	Crescent Creamery Co.
18	Olmsted.....	Rock Dell.....	Marcus Wing.
75	Olmsted.....	Pleasant Grove.....	J. W. Flathers.
1	Otter Tail.....	Fergus Falls.....	W. L. Chappell.
113	Otter Tail.....	Aastad.....	K. D. Erickson.
29	Otter Tail.....	Western.....	Thomas Roberts.
79	Pipestone.....	Edgerton.....	J. B. Barlow.
115	Pope.....	Villard.....	H. A. Adams, Secretary.
112	Redwood.....	North Redwood.....	Charles Fleischer.
35	Renville.....	Buffalo Lake.....	C. D. McEwin.
113	Scott.....	Union Hill.....	M. J. Schmitz.
16	Scott.....	Newmarket.....	John Reintzes.
24	Sherburne.....	Becker.....	Frank Fridley.

## CHEESE FACTORIES IN MINNESOTA.—Continued.

No.	County.	Town.	Proprietor or Manager.
42	Sherburne	Elk River	L. H. Johnson.
116	Sibley	Gaylord.	F. Monthy.
136	Sibley	Gaylord	O. Johnson.
26	Steele	Medford	L. A. Disbrow.
41	Steele	Havanna	Minnesota Creamery Co.
93	Steele	Owatonna.	F. D. Holmes
103	Steele	Owatonna.	Virtue & Pond.
121	Steele	Merton (Owatonna P. O.)	S. Beidelmann & Co.
13	Stearns	Ashley Creek	W. R. James.
84	Stearns	Sauk Center	Anthony Miller.
85	Stearns	Sauk Centre	John Schomish.
94	Stearns	Spring Hill.	C. Sax.
128	Stevens	Swan Lake (Morris P. O.)	W. J. Kasper.
157	Stevens	Hancock	J. W. Smith.
88	Todd	West Union	A. H. Moore.
131	Wabasha	Elgin	Henry Jaehning.
33	Waseca	New Richland	E. A. Comstock.
125	Waseca	Alma City	M. A. Goar.
130	Waseca	Blooming Grove	Woodward & Tibbitts.
40	Washington	Langdon	F. J. Gove.
126	Watsonwan	Madelia	Ramsey Cheese Factory.
129	Wright	Howard Lake	Michels & Holzmänn.
155	Wright	St. Michaels.	

Milk collected from stores and wagons at Minneapolis for two years ending July 31, 1892.

	No. of samples.	Average fat.
1891.		
January	193	3.62
February	104	3.68
March	126	3.59
April	117	3.67
May	249	3.17
June	12	3.75
July	32	4.06
September	129	2.80
October	26	3.95
November	137	3.85
December	60	3.84
1892.		
February	48	3.86
March	142	3.69
April	64	3.56
May	168	3.78
June	68	3.96

Milk from trains and depots:

	No. of Samples.	Average Fat.
1890.		
August		
September		
October		
November	16	3.99 St. Paul
December	126	3.85 St. Paul
1891.		
January	14	4.10 St. Paul
February	—	
March	75	3.76 St. Paul
April	48	3.65 St. Paul
May	63	3.63 St. Paul
June		
July	89	3.94 St. Paul
August	32	3.69 St. Paul
September	60	4.04 St. Paul
October	41	4.28 St. Paul
November	108	4.04 St. Paul
December	130	3.90 St. Paul

1892.

January.....	...	...	...	...
February.....	139	...	4.18	... Minneapolis
February.....	99	...	3.55	... St. Paul
March.....	84	...	3.65	... Minneapolis
April.....	51	...	3.81	... St. Paul
May.....	40	...	3.72	... St. Paul
June.....	113	...	3.65	... St. Paul
July.....	41	...	3.74	... Minneapolis
July.....	24	...	3.91	... St. Paul

## ST. PAUL DEPARTMENT.

Milk analyzed for months of 1890 and 1891, from wagons and stores.

1890.	No. of samples.	Average fat
August.....	24	3.42
September.....	40	3.48
October.....	88	3.44
November.....	58	3.76
December.....	103	3.63
1891.		
January.....	96	3.76
February.....	51	3.75
March.....	60	3.54
April.....	193	3.63
May.....	94	3.47
June.....	115	3.60
July.....	95	3.95
August.....	99	3.55
September.....	126	3.52
October.....	109	3.93
November.....	95	3.68
December.....	62	3.92
1892.		
January.....	27	3.85
February.....	145	3.50
March.....	208	3.33
April.....	79	3.64
May.....	120	3.55
June.....	84	3.61
July.....	13	3.89



CREAMERIES.  
Inspection of milk delivered by patrons.

1891.	No. patrons.	NAME OF CREAMERY.	Average temperature.	Average specific gravity.	Average per cent. of fat.	County.	Method.	Operated by—
Jan. 31	20	Walcott	58	1.032	3.52	Rice	Babcock.	Stock company.
March 2	36	Walcott	58	1.032	3.64	Rice	Babcock.	Stock company.
April 24	11	Svenson's Corners.	60	6.031	3.51	Goodhue	Babcock.	Crescent Creamery Co.
April 27	8	Spring Creek	75	1.030	3.48	Goodhue	Babcock.	Crescent Creamery Co.
April 27	10	Kenyon	60	1.030	3.57	Goodhue	Babcock.	Gutzler Bros.
April 28	20	Moland	62	1.031	3.44	Rice	Babcock.	Crescent Creamery Co.
April 29	26	Richland	64	1.030	3.35	Rice	Babcock.	Crescent Creamery Co.
April 30	34	Dennison	62	1.031	3.53	Goodhue	Babcock.	Crescent Creamery Co.
May 1	28	Preston	60	1.030	3.34	Goodhue	Babcock.	Crescent Creamery Co.
June 3	28	Stanton	63	1.032	3.61	Fillmore	Babcock.	Crescent Creamery Co.
June 9	14	St. Paul	63	1.031	3.31	Goodhue	Babcock.	Graham Bros.
June 10	29	Cannon Falls	64	1.032	3.57	Goodhue	Babcock.	Crescent Creamery Co.
June 11	15	Cannon Falls	64	1.032	3.27	Goodhue	Babcock.	Crescent Creamery Co.
June 12	11	Randolph	68	1.032	2.80	Goodhue	Babcock.	Cannon Falls Creamery Co.
June 23	24	New Chicago	60	1.032	2.91	Dakota	Babcock.	Crescent Creamery Co.
June 24	30	Dean	60	1.032	3.55	Rice	Babcock.	Crescent Creamery Co.
June 24	76	Northfield	60	1.032	3.18	Rice	Babcock.	Crescent Creamery Co.
June 25	36	Dundas	60	1.032	3.19	Rice	Babcock.	Crescent Creamery Co.
June 26	39	Walcott	60	1.031	3.69	Rice	Babcock.	Crescent Creamery Co.
June 30	23	Fairbault	60	1.031	3.73	Rice	Babcock.	Crescent Creamery Co.
July 8	44	Pratt	60	1.032	3.79	Rice	Babcock.	Stock company.
July 9	89	Cooleyville	60	1.032	3.79	Steele	Babcock.	Minnesota Creamery Co.
July 10	40	Blooming Prairie	60	1.031	3.85	Steele	Babcock.	Pratt Creamery Co.
July 20	13	Grand Meadow	62	1.032	3.46	Mower	Babcock.	Berlin and Summit Creamery Co.
July 21	13	Stewartville	62	1.032	3.26	Mower	Babcock.	Union Creamery Co.
July 22	36	Red Oak Grove	60	1.031	3.20	Mower	Babcock.	Grand Meadow Creamery Co.
July 31	60	Fair Point	60	1.032	3.54	Goodhue	Babcock.	C. E. Wallen.
Aug. 2	26	Moscow	60	1.030	3.48	Freeborn	Babcock.	Red Oak Grove Creamery Co.
Aug. 4	23	Rochester	60	1.030	3.10	Olunsted	Babcock.	Crescent Creamery Co.
Aug. 5	21	Byron	62	1.030	2.95	Olunsted	Babcock.	Crescent Creamery Co.
Aug. 6	50	Armstrong	60	1.031	3.80	Freeborn	Babcock.	Crescent Creamery Co.
Aug. 7	79	Ranchott	60	1.030	3.65	Freeborn	Babcock.	J. H. Converse.
Aug. 8	20	Rochester Butter Co.	62	1.031	3.52	Olunsted	Babcock.	N. F. Sauberg.
Aug. 10	11	Rochester Butter Co.	62	1.031	3.52	Olunsted	Babcock.	Rochester Separator and Butter Co.
Aug. 10	61	Glover Valley	60	1.031	3.67	Freeborn	Babcock.	Rochester Separator and Butter Co.
Aug. 11	32	Glenville	60	1.030	3.90	Freeborn	Babcock.	Glover Valley Co-operative Creamery.
Aug. 11	20	Haverhill	60	1.031	3.83	Olunsted	Babcock.	Glenville Dairy Association.
Aug. 12	26	Farmington	60	1.031	3.59	Olunsted	Babcock.	Rochester Separator Co.
Aug. 13	27	Oronoco	60	1.030	3.48	Dakota	Babcock.	Rochester Separator Co.
Aug. 13	96	Richland	60	1.031	3.30	Rice	Babcock.	McCrea Bros.
					3.65		Babcock.	Richland Creamery Co.

Aug. 14....	20	Stone's Corner.....	62	1.030	3.59	Olmsted.....	Babcock.....	Crescent Creamery Co.
Aug. 15....	13	Marion.....	60	1.031	3.36	Olmsted.....	Babcock.....	Rochester Separator and Butter Co.
Aug. 16....	25	Salem.....	62	1.030	3.45	Olmsted.....	Babcock.....	Rochester Separator and Butter Co.
Aug. 17....	20	Douglas.....	60	1.030	3.71	Olmsted.....	Babcock.....	Rochester Separator and Butter Co.
Aug. 18....	113	Clark's Grove.....	60	1.030	4.54	Freeborn.....	Babcock.....	Clark's Grove Creamery Co.
Aug. 19....	50	Manchester.....	60	1.032	3.71	Freeborn.....	Babcock.....	Manchester Creamery Co.
Aug. 20....	36	Mansfield.....	60	1.031	3.63	Freeborn.....	Babcock.....	Mansfield Creamery Co.
Aug. 21....	50	Carleton.....	60	1.031	3.63	Freeborn.....	Babcock.....	Carleton Creamery Co.
Aug. 22....	24	Hartland.....	60	1.031	3.85	Freeborn.....	Babcock.....	Hartland Creamery Co.
Aug. 23....	28	Roscoe.....	60	1.032	3.38	Goodhue.....	Babcock.....	Crescent Creamery Co.
Aug. 24....	36	Roscoe Centre.....	60	1.031	3.68	Goodhue.....	Babcock.....	Crescent Creamery Co.
Aug. 25....	46	Berlin.....	60	1.032	3.68	Steele.....	Babcock.....	Berlin Co-operative Creamery Co.
Aug. 26....	15	Lemond Separator.....	60	1.032	3.71	Steele.....	Babcock.....	C. M. Hanson, Manager.
Aug. 27....	12	Hader.....	60	1.032	3.39	Goodhue.....	Babcock.....	G. O. Miller, Manager.
Sept. 1....	20	Rice's Station.....	60	1.031	3.97	Goodhue.....	Babcock.....	Dickey & Co.
Sept. 2....	13	Mountain Lake.....	60	1.031	4.19	Cottonwood.....	Babcock.....	Mountain Lake Butter and Cheese Co.
Oct. 3....	18	St. James.....	60	1.031	4.06	Watsonwan.....	Babcock.....	Kruse & Ghirls.
Nov. 4....	52	Madellia.....	60	1.031	3.77	Watsonwan.....	Babcock.....	John McCarty, Manager.
1892.								
July 19....	8	Stewartville.....	60	1.032	3.12	Olmsted.....	Babcock.....	C. E. Wallen, Manager.
July 20....	71	Preston.....	60	1.032	3.43	Fillmore.....	Babcock.....	E. J. Graham & Bro., Managers.
July 21....	38	Dundas.....	60	1.031	3.44	Rice.....	Babcock.....	Crescent Creamery Co.
July 22....	68	Northfield.....	60	1.032	3.54	Rice.....	Babcock.....	Crescent Creamery Co.
June 23....	10	Hastings.....	60	1.031	3.45	Dakota.....	Babcock.....	John Le Vesconte.
June 24....	20	Olmsted.....	60	1.032	3.51	Olmsted.....	Babcock.....	Crescent Creamery Co.
May 25....	39	Dennison.....	60	1.032	3.99	Goodhue.....	Babcock.....	Crescent Creamery Co.
May 26....	13	Stanton.....	60	1.031	3.25	Goodhue.....	Babcock.....	Crescent Creamery Co.
May 27....	15	Aspelund.....	70	1.030	3.41	Goodhue.....	Babcock.....	Crescent Creamery Co.
April 28....	42	St. Paul.....	60	1.030	3.64	Ramsey.....	Babcock.....	Crescent Creamery Co.
Feb. 24....	70	Madellia.....	60	1.030	3.63	Watsonwan.....	Babcock.....	Co-operative company.

## CHEESE FACTORIES.

Inspection of milk delivered by patrons.

1891.	No. pat- rons.	NAME OF FACTORY.	Average temper- ature.	Average specific gravity.	Average per ct. of fat.	Towns.	County.	Method.	Operated by.
March 27....	29	Biscay.....	62	1.031	3.25	Biscay...	McLeod.....	Babcock....	Jack Kennedy.
May 1.....	14	Stanton.....	52	1.032	3.30	Stanton.....	Goodhue.....	Babcock....	Norman Daniels.
June 12....	10	New Trier.....	70	1.034	3.11	New Trier.....	Dakota.....	Babcock....	Farmers' Co-operative.
June 13....	14	Hampton.....	70	1.033	3.05	Hampton.....	Dakota.....	Babcock....	Crescent Creamery Co.
July 2.....	38	Merton.....	60	1.032	3.51	Owatonna.....	Steele.....	Babcock....	Merton Cheese Co.
July 2.....	44	Owatonna.....	60	1.032	3.46	Owatonna.....	Steele.....	Babcock....	Minnesota Creamery Co.
July 3.....	29	Havanna.....	60	1.032	3.47	Havanna.....	Steele.....	Babcock....	L. A. Disbrow.
July 7.....	81	Medford.....	60	1.031	3.41	Medford.....	Steele.....	Babcock....	O. Johnson.
July 13....	7	Lansing.....	60	1.032	3.41	Lansing.....	Mower.....	Babcock....	E. B. Williams.
July 14....	13	Turtle Creek....	60	1.031	3.22	Turtle Creek....	Mower.....	Babcock....	Farmers' Co-operative.
July 16....	13	Oakland.....	60	1.032	3.51	Oakland.....	Freeborn.....	Babcock....	F. G. Sweeton.
July 30....	13	Berne.....	66	1.032	3.46	Berne.....	Dodge.....	Babcock....	Crescent Creamery Co.
August 3....	23	Olmsted.....	60	1.032	3.02	Olmsted.....	Olmsted.....	Babcock....	Crescent Creamery Co.
August 7....	14	Rock Dell.....	76	1.029	3.28	Rock Dell.....	Olmsted.....	Babcock....	Farmers' Cheese Factory.
August 18..	18	Byron.....	60	1.032	3.27	Byron.....	Olmsted.....	Babcock....	Rochester Separator & Butter Co.
August 19..	38	Byron.....	62	1.030	3.34	Byron.....	Olmsted.....	Babcock....	Crescent Creamery Co.
August 21..	18	Olmsted.....	64	1.031	3.45	Olmsted.....	Olmsted.....	Babcock....	Crescent Creamery Co.
August 21..	33	Geneva.....	60	1.031	3.74	Geneva.....	Freeborn.....	Babcock....	Geneva Co-operative Creamery.
August 28..	31	Pine Island.....	60	1.032	3.13	Pine Island.....	Goodhue.....	Babcock....	Geneva Co-operative Creamery.
August 29..	23	New Richland..	60	1.032	3.24	New Richland..	Waseca.....	Babcock....	Henry Jaehning.
August 31..	19	Wanamingo.....	60	1.035	3.78	Wanamingo.....	Waseca.....	Babcock....	R. Lund.
Sept. 3.....	7	Austin.....	60	1.034	3.22	Austin.....	Goodhue.....	Babcock....	John Turnbull.
Sept. 3.....	3	Waterville.....	60	1.032	3.50	Waterville.....	Mower.....	Babcock....	Minnesota Creamery Co.
Sept. 4.....	9	Union Hill.....	60	1.031	3.85	Union Hill.....	Scott.....	Babcock....	Union Hill Cheese Co.
Sept. 15....	10	Walsham.....	60	1.034	3.36	Lansing.....	Mower.....	Babcock....	E. B. Williams.
Sept. 17....	13	Hampton.....	60	1.031	3.55	Hampton.....	Dakota.....	Babcock....	Crescent Creamery Co.
Sept. 23....	9	Sauk Centre.....	60	1.031	3.88	Sauk Centre.....	Stearns.....	Babcock....	Anthony Miller & Son.
Sept. 24....	10	Blooming Grove	60	1.032	3.86	Blooming Prairie..	Waseca.....	Babcock....	M. A. Goar.
Sept. 24....	4	Alma City.....	60	1.034	3.85	Alma City.....	Waseca.....	Babcock....	A. E. Comstock.
Sept. 29....	19	Fergus Falls....	60	1.032	4.16	Fergus Falls....	Other Tail....	Babcock....	W. L. Chappel.
Sept. 30....	12	Western.....	60	1.032	3.18	Western.....	Other Tail....	Babcock....	A. E. Wilson.
October 3..	32	Cedar Mills.....	62	1.032	4.35	Cedar Mills.....	Meeker.....	Babcock....	Cedar Mills Factory.
November 1.	31	Biscay.....	60	1.032	3.70	Biscay.....	McLeod.....	Babcock....	Stock Company.



1892.

1892.	Stanton.	60	1.032	3.20	Stanton	Goodhue	Babcock	N. Daniels.
May 19.....	Stanton.....	60	1.031	3.40	Owatonna.....	Steele.....	Babcock....	Minnesota Creamery Co.
May 23.....	Owatonna.....	60	1.032	3.28	Byron.....	Olmsted.....	Babcock....	Crescent Creamery Co.
May 27.....	Byron.....	60	1.031	3.51	Austin.....	Mower.....	Babcock....	A. P. McBride.
June 5.....	Turtle Creek...	60	1.032	3.40	London.....	Freeborn....	Babcock....	Co-operative Association.
June 7.....	London.....	60	1.032	3.25	Havanna.....	Steele.....	Babcock....	L. A. Disbrow.
June 14.....	Havanna.....	60	1.032	3.20	Rock Dell....	Olmsted.....	Babcock....	Marcus Wing.
June 16.....	Rock Dell....	60	1.032	3.63	Merton.....	Steele.....	Babcock....	Crescent Creamery Co.
June 20.....	Medford.....	60	1.032	3.20	Merton.....	Steele.....	Babcock....	N. O. Partridge.
June 21.....	Merton.....	60	1.031	3.46	Union Hill...	Scott.....	Babcock....	Mat. J. Schmitz.
June 24.....	Union Hill...	60	1.031	3.40	Hampton.....	Dakota.....	Babcock....	John Delfield.
June 29.....	Hampton.....	60	1.031	3.50	New Trier....	Dakota.....	Babcock....	N. P. Gores.
June 30.....	New Trier....	60	1.030	3.38	Lansing.....	Mower.....	Babcock....	F. Schuett.
July 5.....	Lansing.....	60	1.031	3.78	Acoma.....	McLeod.....	Babcock....	Farmers' Co-operative.
July 7.....	Acoma.....	60	1.032	3.17	Cedar Mills...	McLeod.....	Babcock....	Farmers' Co-operative.
July 8.....	Cedar Mills...	60	1.031	3.46	Sumpton.....	McLeod.....	Babcock....	Farmers' Co-operative.
July 11.....	Sumpton.....	60	1.032	3.68	Minneota.....	Lyon.....	Babcock....	Farmers' Co-operative.
July 13.....	Minneota.....	60	1.031	3.75	London.....	Freeborn....	Babcock....	Farmers' Co-operative.
July 15.....	London.....	60	1.031	3.40	Lansing.....	Mower.....	Babcock....	Lansing Cheese Factory Co.
July 18.....	Lansing.....	60	1.031					

## INSPECTION OF DAIRIES TRIBUTARY TO ST. PAUL,

With reference to the sanitary condition of barns and stables, condition of cows, kind of food and water used, etc. This inspection of 179 herds, consisting of 3,492 cows, was completed during the month of April, 1892, by Inspector J. V. Wilson, whose report is as follows:

NAMES.	Residence.	No. License.	No. Cows.	Condit'n of stock.	Condit'n of stables.	Ventila- tion.	Feed found in barn.	Remarks.
Glennen & McGraw...	Desnoyer Park.....	61	45	Good	Good	Good	Ground cockle, bran and wild hay..	Cows healthy, good flesh.
Alexander & Booth...	Old St. Anthony road.....	25	36	Ex. good	Good	Good	Ground cockle, bran and wild hay..	Cows excellent flesh.
Nodell & Son.....	Old St. Anthony road.....	4,077	33	Fair	Good	Good	Ground cockle, bran and wild hay..	Cows clean, thin of flesh.
E. J. Johnson.....	Minn. Transfer.....	4,067	16	Good	Good	Bad	Ground cockle, shorts and timothy.	Cows clean, good flesh.
Mrs. Annie Blomberg.	1832 University ave.....		9	Good	Good	Good	Screenings, shorts and wild hay....	Low, no ventilations.
Hammermeister Bros.	Simon av near Anapolis.	124	47	Good	Good	Good	Gr'nd feed, vinegar waste & clover	Cows clean, good flesh.
Mrs. Boege.....	Thomson Lake.....	679	11	Good	Good	Good	Gr'nd feed, bran and red top hay...	Cows healthy and clean.
Mrs. Fredrika Erick...	Sylvia st, South Park....	97	27	Good	Good	Good	Gr'nd feed, sprouts, bran, shorts, cl'v r	Cows healthy and clean.
Jacob Siegfried.....	Sylvia st, South Park....		24	Good	Good	Good	Corn meal, shorts, oil meal & clover	Good flesh and clean.
Herman Nelson.....	1378 Minnehaha st.....	683	21	Good	Good	Fair	Shorts, bran and wild hay.....	Good flesh and clean.
H. W. Hanson.....	Cor Reaney & Birmingham	8	22	Good	Fair	Fair	Shorts, bran and wild hay.....	
Swan Mattson.....	Near cor Boek, on Beach	4,109	11	Out	Good	Fair	Malt and oat straw.....	
Jno. Peterson.....	Near cor Boek, on Beach		4	Fair	Good	Bad	Wheat shorts, bran, potatoes, clover	
Aug. Carlson.....	Near cor Boek, on Beach		11	Good	Good	Bad	Bran, potatoes and oat straw.....	
Hans Peterson.....	Cor Boek and Margaret.	74	19	Good	Good	Fair	Malt, bran and clover.....	Stock clean, good flesh.
Jno. Lundgaard.....	Cor Boek and Margaret.	4,041	21	Good	Good	Good	Malt, shorts and clover.....	Stock clean, good flesh.
Henry Huftmeyer.....	Hazel Park.....	753	11	Fair	Good	Fair	Bran, oil meal and clover.....	
Fred Jackson.....	712 Hyacinth st.....	1,868	30	Good	Good	Ex. good	Shorts, gr'nd feed, oil meal, corn fod r	Stock in fine condition.
Gabriel Peterson.....	712 Hyacinth st.....	83	21	Good	Good	Good	Malt, bran and wild hay.....	Stock clean.
Emma Erickson.....	Cottage st.....	4,043	24	Good	Good	Bad	Malt, bran and clover hay.....	Stock clean.
Hans Clausen.....	Greenbrier and Denne st	119	6	Good	Good	Bad	Malt, ground cockle and clover hay.	Stock clean, barn low.
Andrew Swanson.....	Searles st.....	59	19	Good	Good	Bad	Malt and clover hay.....	
Robert Bryan.....	Arcade st.....	14	19	Fair	Fair	Bad	Gr'nd feed, shorts, bran, clover hay.	Stock extra clean.
Philip Pifer.....	857 Hawthorne st.....	1,824	48	Ex. good	Ex. good	Good	Bran, shorts, oil meal and clover hay	Stock good flesh.
Fruhs Christianson...	776 Jessamine st.....	411	8	Good	Good	Fair	Shorts, bran and wild hay.....	Stock extra clean.
J. P. Rudeen.....	737 Magnolia st.....	108	7	Ex. good	Good	Bad	Bran and clover hay.....	Stock in good flesh.
C. A. Carlson.....	688 Magnolia st.....	3,938	5	Good	Good	Good	Bran and shorts, clover hay.....	Stock clean.
John Gobeley.....	Nevada av, cor. Oliver	11	19	Ex. good	Ex. good	Good	Bran, malt, shorts and clover hay...	Stock clean.
Paul Spreigel.....	Cor. Neb. & Oliver sts...	13	16	Ex. good	Clean	Bad	Malt, bran and clover hay.....	Stock clean.
Jno. Griebowske.....	Adolph st.....	52	12	Ex. good	Good	Good	Malt, gr. fd., shorts and clover hay.	Stock clean & good flesh.
Jos. Bearth.....	Cor. Oliver & Kansas sts.	69	12	Ex. good	Good	Bad	Malt, bran and clover hay.....	Stock extra clean.
Ernest Schloser.....	1556 Rice st.....	30	15	Fair	Good	Bad	Mangles, bran, shorts, gr. fd., clover	Stock in fair condition.
Jno. Hollanitsch.....	Cor. Marlon & Phalan av	836	10	Good	Good	Bad	Bran, shorts and clover hay.....	Stock extra clean.
Henry Fruetel.....	Como and Phalan av.....	167	29	Ex. cond	Ex. good	Extra		

Herman Fructel.....	Cor. Cottage & Matilda av.....	139	15	Ex. cond	Good	Good	Bran, ground feed and clover hay...	Stock poor.
Anton Thom.....	Cor. Galtier and Phalan av.....	47	21	Fair	Good	Fair	Malt, bran and clover hay...	Stock poor.
Robt. Patterson	Marion st.....	1,264	9	Thin	Good	Fair	Bran, shorts and clover hay...	
Henry Schulz.....	Cor. Cottage & Matilda sts.....	5,003	3	Fair	Good	Bad	Bran and timothy hay...	
Hipshen Bros.....	Gaultier and Carbon st.....	1,173	21	Good	Good	Good	Bran, shorts, gr. fd. and clover hay...	Stock clean.
G. H. Banken.....	Cor. Rice and South st.....	94	16	Good	Good	Good	Bran, shorts, gr. fd. and clover hay...	Stock clean & good flesh.
O. C. Miller.....	1225 Burns av.....	72	6	Out	Good	Bad	Wheat shorts and clover hay...	Stock very good flesh.
Jno. Anderson.....	1131 Hudson av.....	76	11	Good	Good	Bad	Ground feed, bran and clover hay...	Stock extra condition.
Lno. Roths.....	1166 Euclid st.....	145	9	Good	Good	Bad	Ground feed, bran and clover hay...	Stock good flesh.
L. Paulson.....	1315 E. 3d st.....	64	13	Good	Good	Good	Bran, oil meal and clover hay...	
Christ Anderson.....	Seigel st.....	4,002	14	Good	Good	Good	Bran, shorts and clover hay...	
Hans Johnson.....	Cor. Segel and Fulton .....	144	19	Ex. good	Good	Good	Bran, oil meal and clover hay...	
Jacob Nelson.....	1366 E. 4th st.....	32	25	Ex. good	Good	Fair	Bran, shorts and clover hay...	
Robert Johnson.....	1229 Francis st.....	6,000	6	Ex. good	Good	Bad	Bran, shorts and wild hay...	
W. Schuette.....	Arkwright st.....	7,000	7	Poor	Good	Bad	Bran, shorts and clover hay...	
Jno. Christianson.....	Garry st.....	743	9	Poor	Good	Bad	Bran, shorts and clover hay...	
Hugh Montgomery.....	334 Arkwright st.....	2	93	Ex. good	Ex. good	Good	Ground feed, bran and clover hay...	Stock clean.
B. M. Pierce.....	Cor. Brainard av and Desota.....	259	17	Ex. good	Good	Good	Bran, shorts and clover hay...	Stock clean & good flesh.
Jno. Olson.....	Cor. Desota and Hyacinth sts.....	3	35	Ex. good	Good	Good	Gr. fd., gr. scr., shorts, bran & clover	Stock clean.
M. Remakel.....	Brainard av.....	271	13	Ex. good	Good	Fair	Malt and clover hay...	Stock clean.
J. H. Mongan.....	349 E. Geranium st.....	58	21	Good	Good	Fair	Bran, shorts and clover hay...	Stock clean.
F. Koechler.....	1231 Courtland.....	40	14	Good	Good	Bad	Malt, bran, shorts and wild hay...	Stock clean.
Henry Keller.....	Newport.....		13	Good	Good	Good	Bran, shorts, clover hay and fodder.	Stock clean.
Deakin Bros.....	1820 Marshall av.....		32	Poor	Good	Good	Bran, shorts and wild hay...	Cows thin of flesh.
Eugene Marien.....	Newport av.....	None	13	Ex. good	Good	Good	Bran, shorts and wild hay...	Cows clean & good flesh.
Christ Jensen.....	Afton road.....	4,100	13	Good	Good	Good	Bran, shorts and wild hay...	Cows clean & fine cond.
Martin Pinska.....	Cor. Walsh & Geranium.....	89	35	Ex. good	Good	Good	Malt, bran, shorts and wild hay...	Stock very fine.
M. Anderson.....	Hastings rd., nr. High d.....	4,122	27	Ex. good	Good	Good	Malt, bran, shorts and clover hay...	Cows clean.
Peter Fritz.....	Woodbury.....	773	13	Ex. good	Good	Fair	Bran, shorts and clover hay...	Cows in good flesh.
Paul Stiller.....	McKubin and Carbon.....	704	12	Ex. good	Good	Good	Shorts, bran and timothy hay...	
Karl Rudiger.....	Grott and Carbon.....	4,009	3	Good	Good	Bad	Wheat shorts and wild hay...	
Aug Peschke.....	St. Albans st.....	4,049	12	Good	Good	Poor	Shorts bran and oats straw...	Clean stock.
Gustav Rothke.....	321 Farrington av.....	6,010	3	Ex. good	Good	Poor	Shorts, bran and wild hay...	Cows clean.
Geo. D. Kuhn.....	Farrington av.....	2,049	14	Good	Good	Good	Shorts, bran and oats straw...	Cows clean.
Aug. Mundt.....	1250 Farrington av.....		8	Out	Good	Good	Shorts, bran, corn fodder & oats st w	
Herman Kler.....	A. Zibbel.....	67	11	Out	Good	Fair	Bran, corn meal and clover hay...	
Hensell Weddell.....	1153 Gaultier st.....	6,015	18	Out	Good	Bad	Shorts, bran and timothy hay...	
Herman Lauter.....	Cottage near Marion.....	737	7	Ex. good	Good	Bad	Shorts, bran and timothy hay...	
Ole Einsberg.....	Woodbridge, nr. Marion.....	6,012	4	Ex. good	Good	Good	Corn meal, bran and clover hay...	Stock clean.
Eric Larson.....	Cor. South & Woodbridge	4,132	3	Good	Good	Good	Bran, shorts and wild hay...	Stock clean.
Geo. D. Kuhn.....	321 Farrington av.....	6,010	7	Good	Good	Fair	Bran, corn meal and clover hay...	Barn small and close.
Soren Hanson.....	919 Marion st.....	None	4	Good	Good	Bad	Bran, shorts and clover hay...	
Jacob Pearson.....	923 Waysetta st.....	None	4	Good	Good	Bad	Bran, shorts and clover hay...	
Nels Nelson.....	871 Woodbridge.....	710	4	Good	Good	Bad	Bran and clover hay...	



## INSPECTION OF DAIRIES TRIBUTARY TO ST. PAUL—Continued.

NAMES.	Residence.	No. License.	No. Cows	Condit'n of stock.	Condit'n of stables.	Ventila- tion.	Feed found in barn.	Remarks.
F. R. Peck .....	1097 Edmonds st. ....	885	66	Good.	Ex. good	Good	Bran, shorts and clover hay.	Extra fine lot of cows.
E. M. Johnson .....	Cor. Lexington & Fuller	254	70	Good	Good	Good	Bran, good screenings, shorts, clover and timothy hay	Everything neat and cl.
Peter Nichols .....	Hamline ave. 2 miles N.							Cows clean.
	W. of Lake Como.	160	18	Good	Good	Good	Bran, shorts and timothy hay.	Cows clean.
Jos. Lottenbach .....	McCallister Park .....	859	13	Good	Good	Good	Bran, shorts and wild hay	Cows clean.
C. W. French .....	Cor. Pascal & St. Claire.	1,965	22	Good	Good	Good	Bran, grd feed, buckwheat & wild hay	Cows clean.
Wm. Bayliss .....	St. Claire st. nr. Hamline	148	8	Bad	Good	Good	None, feeds potatoes one time daily.	Stock very thin in flesh.
Mrs. P. Booth .....	Ridgewood Park .....	68	11	Good	None jst	Moved	Shorts and wild hay	No barn, just moved.
Chas. Plau .....	Inver Grove .....	4,075	20	Good	Good	Bad	Bran and timothy and clover hay	Cows clean.
Jno. Harberger .....	Spring Park Mail S. St.							
	Paul .....	872	9	Good	Good	Good	Corn meal, shorts and timothy hay.	Cows clean.
H. Radant .....	Annapolis st. barn near							
	Kerle slope .....	1	6	Good	Good	Good	Corn meal and clover hay	Cows clean.
C. Klenk .....	Barn nr. Burns & Shaw's							
	1b. y'd. 355 Campbell st	115	10	Good	Good	Good	Corn, meal, shorts and grass.	
Jno. Marray .....	Bought out D. Belair.							
	West St. Paul Flats .....	None	24	Good	Bad	Bad	Vinegar waste, bran and tim'ly hay	Low, poor barn.
A. G. Gaynier .....	328 Florida st. ....	736	29	Good	Good	Good	Vinegar waste, bran, shorts and clover hay	Cows in excellent cond.
R. P. Jackson & Co. ....	West St. Paul Flats .....							Cows in healthy cond.
	Lawrence St. ....	190	100	Good	Good	Good	Corn meal, shorts, bran and clover.	
M. J. Dunn .....	West St. Paul Flats .....	154	18	Good	Good	Bad	Bran, vin. waste, shorts and clover.	Stock clean, good flesh.
R. A. Toiten .....	West St. Paul Flats .....	57	25	Good	Ex. good	Good	Malt, good feed, bran, clover hay	Stock clean, good flesh.
Nick Welch .....	Near Mendota .....	727	21	Good	Ex. good	Good	Malt, bran and wild hay	Stock clean, good flesh.
Jos. Webber .....	Near Mendota .....	132	29	Good	Ex. good	Good	Shorts, good cockel cornfodder, clover	Cow very dirty.
Jos. Tounignaut .....	1½ miles S. of Mendota	650	10	Good	Low, w't	Bad	Bran and timothy hay	
Philip Kerkey .....	Dodd Road, 4 miles out.	2,079	16	Good	Good	Good	Bran, shorts and clover hay	
Mrs. J. Howell .....	Dodd rd. cor. Central av.	2,061	24	Good	Good	Good	Bran, shorts, millet and clover	Cows clean, good flesh.
Michael Cleary .....	Dodd road .....						Bran, shorts and wild hay	Cows clean, good flesh.
Chas. Hause .....	Lilly Dale add .....	Whol	6	Ex. good	Good	Good	Bran, shorts and wild hay	
C. Clarkson .....	Lilly Dale add .....	23	14	Ex. good	Good	Good	Good feed, bran and wild hay	
Christ Hendrickson .....	Lilly Dale add .....	2,064	23	Ex. good	Good	Good	Corn meal and clover	Stock clean.
Nels Hanson .....	Cor. Beck and Suburban	198	34	Extra	Good	Bad	Bran, shorts and timothy hay	Stock clean.
Wm. A. Pothhoff .....	Woodbury, Wash. Co.	2,017	23	Extra	Good	Good	Bran, shorts and clover hay	Stock clean.
W. F. Guernsey .....	Tanner's lake .....	4,024	22	Extra	Good	Good	Bran, shorts and clover hay	
Oscar Larson .....	893 Hudson av. ....	89	18	Good	Good	Bad	Bran, shorts and wild hay	Stock not clean.
M. Mossong .....	Pigs Eye bottom .....	780	34	Good	Good	Bad	Malt, bran and clover hay	Stock clean.
Jno. W. Smith .....	West 7th st .....	133	15	Good	Good	Fair	Malt, good feed and corn fodder	
T. F. Smith .....	West 7th st .....	4,030						
Godfried Bergman .....	Store Bergman Bros., 457							
	St. Peter st. ....		10	Ex. good	Good	Good	Bran, shorts and wild hay	Cows clean and fair.

Sam Sturzenegger.....	Stewart av.....	44	15	Ex. good	Good.....	Good.....	Malt, bran and clover hay.....	Stock clean.
Suther & Dahl.....	West 7th and Madison st	735	39	Ex. good	Good.....	Fair.....	Malt, shorts and clover hay.....	Stock clean.
Tobias Eiller.....	Stewart av.....	None	16	Good.....	Good.....	Bad.....	Malt, vinegar waste and timothy hay.....	Stock clean.
Chas. Sattler.....	Near Shot Tower, off W.							Stock clean.
W. Hampel.....	7th st.....	120	17	Good.....	Good.....	Bad.....	Malt, vinegar waste and wild hay.....	Stock clean.
Frank Lightner.....	980 Otto av, nr W. 7th st.	258	11	Good.....	Good.....	Bad.....	Vinegar waste, bran and wild hay.....	Stock clean.
Dick Benecke.....	Randolph st.....	41	10	Good.....	Good.....	Good.....	Vin. waste, shorts, malt, timothy hay.....	Stock clean.
Chas. McCarron.....	Albermarle st, near Cot-	46	10	Ex. good	Good.....	Good.....	Malt, corn meal, bran, shorts, clover	Stock clean.
Thos. Montgomery.....	tage.....		37	Ex. good	Good.....	Good.....	Wheat shorts, gr'd feed, millet hay	
F. C. Hammond.....	McCarron's lake.....	4,120	19	Ex. good	Good.....	Good.....	Bran, corn meal and wild hay.....	
	Pump House near Mc-	4,135						
Jno. A. Johnson.....	Carron's.....	278	62	Fair.....	Good.....	Good.....	Wheat shorts and clover hay.....	
Jno. Johnson.....	1037 Lincoln av.....	5	12	Good.....	Fair.....	Good.....	Shorts, bran, timothy and clover hay.....	Stock in ex. condition.
J. P. Briggs.....	1174 Grand av.....	706	18	Ex. good	Good.....	Good.....	Shorts, gr'd feed, bran and clover hay.....	Stock clean.
Jacob Hinkle.....	213 Vernon av.....	730	6	Good.....	Good.....	Good.....	Shorts, bran and timothy hay.....	
Wm. Rixman.....	Randolph near Snelling.....	176	14	Out.....	Good.....	Good.....	Mangles, vinegar, w'st bran, timothy	Bad, low barn.
Hugo Lorenz.....	Harford av.....	101	10	Good.....	Low, wet	Bad.....	Vinegar, waste bran and wild hay.....	
Gus Schmidt.....	Otto av.....	4,067	22	Good.....	Good.....	Fair.....	Malt, bran and wild hay.....	
D. J. Luby.....	Cleveland av.....	56	15	Good.....	Good.....	Fair.....	Bran, shorts and timothy hay.....	
Bragg Bros.....	Montreal & Snelling avs.....	4,116	107	Ex. good	Good.....	Fair.....	Ground feed, and clover hay.....	Stock in ex. condition.
Jno. Peterson.....	Montreal av.....	2,045	23	Ex. good	Good.....	Fair.....	Ground wheat, shorts and clover.....	Stock in ex. condition.
P. J. Keough.....	Montreal & Hamline avs.....	1,099	40	Ex. good	Ex. good	Good.....	Ground feed, timothy and clover.....	Cows clean.
O. C. Miller.....	Hamline av.....	72	6	Fair.....	Good.....	Poor.....	Wheat shorts and clover hay.....	Stock not in.
Jno. Anderson.....	1225 Burns av.....	76	11	Good.....	Good.....	Poor.....	Ground feed, bran and clover hay.....	Stock good.
L. Paulson.....	1131 Hudson av.....	64	11	Good.....	Good.....	Poor.....	Gr'd feed, wheat shorts and clover.....	Stock clean and healthy
Christ Anderson.....	1165 Euclid st.....	145	9	Good.....	Good.....	Poor.....	Wheat bran, oil meal and clover.....	Stock clean, good flesh.
Hans Johnson.....	Seigel st, Ontario.....	4,002	13	Good.....	Good.....	Good.....	Wheat bran, shorts and clover hay.....	Stock in very good flesh.
Jacob Nelson.....	1386 E 4th av.....	144	19	Good.....	Good.....	Medium.....	Bran, oil meal and clover hay.....	Stock in ex. condition.
Robert Johnson.....	1229 Francis st.....	32	25	Good.....	Good.....	Good.....	Bran, wheat shorts and clover hay.....	Stock in very good cond.
Lars Anderson.....	981 Rose st.....	214	6	Not in.....	Good.....	Bad.....	Bran, shorts and clover.....	Four ventilation.
Jno. Sackrison.....	968 Maryland st.....	4,050	8	Pr&T ty	D y. l. w	Bad.....	Malt and clover.....	Stock poor and dirty.
Frank Johnson.....	955 Rose st.....	4,246	5	Fair.....	Good.....	Fair.....	Bran, shorts and clover.....	Stock healthy.
Nels Olson.....	997 Rose st.....	4,104	8	Fair.....	Good.....	Bad.....	Bran, shorts, malt and clover.....	Stock good flesh, dirty.
Gust Kolt.....	Cor. Earl & Rose sts.....	644	2	Good.....	Fair.....	Good.....	Wheat shorts and wild hay.....	
A. J. Peterson.....	Jessie near Edgerton.....	149	22	Fair.....	Good.....	Good.....	Wheat shorts, bran, malt and clover	Stock nice and clean.
Torgor Torgersen.....	Jessie near Edgerton.....	62	20	Fair.....	Good.....	Good.....	Wheat shorts, bran, malt and clover	Stock nice and clean.
Chas. Jacobson.....	Jessie near Edgerton.....	73	16	Fair.....	Good.....	Fair.....	Bran, shorts and wild hay.....	Stock in fair flesh.
Fred Versig.....	On old Canada road.....	123	19	Good.....	Good.....	Good.....	Malt, bran, shorts and clover.....	Stock in good flesh.
Nels Peterson.....	Cor. Edgerton & King.....	4,120	5	Good.....	Good.....	Fair.....	Ground feed, bran and clover.....	Nice clean place.
C. S. Graham.....	Min polis av & Edgerton.....	171	20	Good.....	Good.....	Fair.....	Malt, screenings, bran, shorts, clover	Stock good flesh.
G. A. Damborg.....	1561 Edgerton st.....	60	58	Ex. good	Good.....	Fair.....	Gr'd screenings, bran, shorts, clover	Stock clean, good flesh.
G. A. Johnson.....	Cor. Carey & W. Bear rd	70	26	Good.....	Good.....	Fair.....	Malt bran, shorts and clover.....	Stock clean, good flesh.
Jos. Burwell.....	Hazel Park.....	15	15	Poor.....	Good.....	Fair.....	Bran and clover hay.....	Stock very poor.
Fisher Ames.....	Hazel Park.....	656	16	Good.....	Good.....	Good.....	Gr'd feed, bran, shorts & clover hay	Stock healthy, good cond
Mrs. N. P. Taylor.....	Hazel Park.....	813	5	Good.....	Good.....	Good.....	Ground feed, bran and oats straw.....	Stock healthy and clean.
N. G. Ahlstrom.....	Amity st., Lake Phalan.....	77	11	Ex. good	Good.....	Fair.....	Wheat, shorts, mangles, wild hay.....	

## INSPECTION OF DAIRIES TRIBUTARY TO ST. PAUL—Continued.

NAMES.	Residence.	No. License.	No. Cows	Condit'n of stock.	Condit'n of stables.	Ventila- tion.	Feed found in barn.	Remarks.
O. McMahon.....	Prosperity avenue.....	175	30	Good....	Good....	Bad.....	Wht. bran, grd. feed and timothy...	
B. Dixon.....	Gladstone.....	1,862	24	Good....	Good....	Bad.....	Wht. bran, shorts, timothy, clover...	
Andersen Bros.....	Stees' farm.....	197	10	Good....	Good....	Good....	Malt, wht. bran, grd feed, and clover	Stock in good flesh.
Dix & Son.....	1109 Woodbridge st.....	792	7	Good....	Good....	Good....	Bran, shorts and wild hay.....	Cows dirty.
J. P. Jensen.....	1105 Woodbridge st.....	none	3	Good....	Good....	Fair....	Bran, shorts and timothy hay.....	Cows clean and g'd flesh
P. M. Holz.....	1263 Rice.....	114	8	Good....	Good....	Fair....	Bran, grd. feed, clover and timothy...	Clean and good flesh.
Ed Knowlan.....	Rose Lawn.....	121	35	Good....	Good....	Bad.....	Bran, shorts, burnt wht. corn fodder	Clean and good flesh.
Mathias Strantz.....	Little Canada village.....	50	14	Good....	Ex. good	Good....	Malt, bran and timothy hay.....	Cows good flesh.
Fred Seiberlich.....	Rice st., New Canada Tp.....	34	16	Good....	Ex. good	Fair....	Bran, shorts and clover hay.....	Cows clean.
Wm. Dohmen.....	Rice st., New Canada Tp.....	184	23	Fair....	Ex. good	Bad.....	Malt, bran, shorts and clover hay...	Cows clean.
Frank Unfried.....	Rice st., New Canada Tp.....	132	11	Ex. good	Good....	Good....	Rye, shorts and timothy hay.....	
A. Seiberlich.....	Rice st., New Canada Tp.....	713	17	Good....	Good....	Good....	Malt, bran, shorts and timothy hay...	
Chas. Seiberlich.....	Rice st., New Canada Tp.....	7	28	Good....	Good....	Good....	Malt, bran, sh'ts, clover, corn fodder	
Philip Rupp.....	E. of Rice st., N. Can. Tp.....	45	16	Good....	Good....	Good....	Malt, bran, shorts and clover hay...	Cows very clean.
Amel Richter.....	E. of Rice st., N. Can. Tp.....	213	16	Good....	Ex. good	Good....	Bran, sh'ts, corn meal, tim'y, millet.	Cows very clean.
Henry Schroeder.....	Rice st., New Canada Tp.....	99	68	Ex. good	Ex. good	Extra....	Bran, shorts and clover hay.....	
Frank Tchida.....	Rice st., New Canada Tp.....	649	11	Ex. good	Good....	Good....	Bran, shorts and clover hay.....	Stock in ex. condition.
Fred Wund.....	Rose Lawn.....	669	9	Ex. good	Good....	Good....	Bran, shorts and clover hay.....	Stock in ex. condition.
Stephen Schneider.....	Rose Lawn.....	648	9	Ex. good	Good....	Good....	Bran, shorts and clover hay.....	Fair flesh.
Emil Clapp.....	North St. Paul.....	4,008	7	Fair....	Poor....	Bad.....	Ground feed, wild hay and fodder...	Stock clean.
John Rutenacht.....	1½ miles E. of St. Paul..	19	58	Good....	Good....	Extra....	Malt, ground feed and wild hay....	Stock clean and g'd flesh
I. W. Gillett.....	1 mile S. E. of St. Paul..	135	23	Good....	Good....	Extra....	Corn fodder, bran, grd. feed, timothy	Stock clean and g'd flesh
C. Montgomery.....	1 mile S. of St. Paul.....	104	16	Good....	Good....	Fair....	Corn fodder, potatoes and clover hay	Stock clean and g'd flesh
Jacob Hancy.....	4 miles S. of White Bear, on White Bear road.....	1,820	21	Good....	Good....	Fair....	Grd. feed, bran and timothy hay....	Clean cows.
M. J. Klaus.....	Gervais Lake.....	81	23	Good....	Good....	Good....	Shorts, grd. cockel, bran, timothy...	Stock clean and slick.
L. E. Pinska.....	Gervais Lake.....	855	24	Good....	Good....	Good....	Bran, wht. sh'ts, tim'y, corn fodder	Stock clean and g'd flesh
F. H. Pinska.....	Gervais Lake.....	181	47	Good....	Good....	Fair....	Bran, ground cockel, timothy hay...	



## INSPECTION OF DAIRIES TRIBUTARY TO MINNEAPOLIS,

With reference to the sanitary condition of the barns and stables, condition of cows, kind of feed and water used, etc. This inspection of 219 dairies, consisting of 5,762 cows, was performed during the months of April and May, 1892, by Inspectors Hokemeier and Wildt. Their report to the commissioner is as follows:

NAMES.	Location.	No. of cows.	Condition of cows.	Condition of barn.	Kind of feed.	Kind of water.	Ventilation.	Remarks.
P. C. Larson.	Lake Amelia.	35	Ex. good	Good	Ground cockle, shorts and hay	Well	Good	Stock clean.
George Peterson.	22d av. and 42d st.	27	Ex. good	Poor	Ground cockle, shorts and hay	Well	Good	Stock clean.
Johnson & Oresund.	Emeral av. near Lake	23	Poor	Poor	Ground cockle, corn fodder and hay	Spring	Poor	Stock poor.
John Mahon.	15th st. and 14th av. S.	10	Poor	Poor	Bran and shorts, no hay	Well	Poor	Stock clean.
D. F. Hallett.	21st av. and 38th st.	15	Good	Poor	Ground screenings and corn fodder.	Well	Poor	Stock dirty.
E. A. Monroe.	21st av. and 37th st.	40	Good	Poor	Cockle, corn and hay	Well	Poor	Stock dirty.
Johnson & Peterson.	Lake Amelia.	24	Good	Good	Cockle, bran, shorts and corn fodder	Well	Poor	Stock clean.
Rasmus Nilson.	Lake Amelia.	19	Good	Good	Cockle, shorts and clover hay	Well	Poor	Stock clean.
L. A. Engel.	Chicago av. and 50th st.	40	Good	Good	Bran and shorts	Well	Good	Stock clean.
O. Anderson.	48th st. and 16th av. S.	24	Ex. good	Good	Hay, bran and shorts	Well	Poor	Stock clean.
Nels Anderson.	47th st. and Chicago av.	17	Good	Good	Cockle, hay, bran and shorts.	Well	Poor	Stock clean.
Lauritz Peterson.	Bloom'g'n av. and 42d st.	27	Good	Poor	Cockle, hay, bran, malt and shorts.	Well	Poor	Stock clean.
Peterson Bros.	38th st. and 12th av. S.	10	Good	Poor	Cockle, bran, corn fodder and hay.	Well	Poor	Stock clean.
Carlson & Widen.	37th st. and 33d av.	28	Good	Poor	Cockle, corn fodder and hay	Well	Poor	Stock dirty.
H. Sorpcnson.	Lake Amelia.	27	Good	Poor	Malt, screenings and hay	Well	Poor	Stock clean.
W. W. Lewcock.	45th st. and Portland av.	8	Good	Good	Cockle, bran and hay	Well	Poor	Stock clean.
A. C. Peterson.	50th st. and 12th av.	47	Good	Good	Cockle, bran, corn fodder and hay	Well	Good	Stock clean.
H. C. Hanson.	Chicago av. and 49th st.	26	Ex. good	Good	Cockle, bran, corn fodder and hay	Well	Good	Stock clean.
P. Benson.	46th st. and 18½ av.	27	Good	Good	Cockle, bran, corn fodder and hay	Well	Poor	Stock clean.
A. R. Rhunke.	20th av. and 37th st. S.	6	Good	Good	Cockle, bran and hay	Well	Good	Stock clean.
C. G. Anderson.	3700, 31st av. S.	18	Good	Good	Cockle and corn fodder	Well	Good	Stock clean.
S. J. Baldwin.	36th st. and 21st av S.	11	Good	Good	Cockle and corn fodder	Well	Good	Stock clean.
W. L. Stowe.	Edina Mills.	5	Good	Good	Cockle and hay.	Well	Good	Ex. good condition.
J. H. Craik.	Edina Mills.	38	Good	Good	Cockle and hay.	Creek	Good	Gen'l appear. clean.
W. H. Lane.	Edina Mills.	17	Ex. good	Good	Cockle and corn fodder	Well	Good	Gen'l appear. neat.
H. W. Richardson.	Edina Mills.	14	Good	Good	Cockle, oats and corn fodder	Well	Good	Gen'l appear. clean.
Edmund Hall.	Edina Mills.	14	Good	Good	Cockle and corn fodder	Well	Good	Gen'l appear. clean.
P. A. Graham.	Edina Mills.	46	Good	Poor	Cockle and corn fodder	Well	Good	Stock clean.
D. Townsend.	Richfield.	93	Ex. good	Good	Cockle, corn, oil meal and hay	Well	Good	Stock clean.
Johnson & Peterson.	Richfield.	9	Good	Good	Malt, shorts, oil meal and corn fod'r	Well	Good	Stock clean.
James Jenkins.	Richfield.	27	Good	Good	Ground screenings and corn fodder.	Well	Good	Stock clean.
Wm. Roy.	Richfield.	6	Good	Good	Bran, shorts and hay	Well	Good	Stock clean.
J. L. Smith.	Lake st. and Portland av	39	Good	Good	Bran, shorts and hay	Well	Good	Stock clean.

## INSPECTION OF DAIRIES TRIBUTARY TO MINNEAPOLIS,—Continued.

NAME.	Location.	No. of cows.	Condit'n of cows.	Condit'n of barn.	Kind of feed.	Kind of water.	Ventilation	Remarks.
Nils Olson.....	Richfield.....	26	Good	Good	Bran shorts and corn fodder.....	Well	Good	Stock clean.
N. P. Olson.....	31st st. and 11th av.....	12	Good	Good	Bran shorts and clover hay.....	Well	Poor	Stock clean.
Nels Mortenson.....	4th st. and 8th av. S.....	40	Good	Good	Malt, ground feed and corn fodder.....	Well	Good	Stock clean.
A. N. Hall.....	Richfield.....	20	Good	Poor	Cockle, bran and hay.....	Well	Poor	Stock clean.
Andrew Peterson.....	Richfield.....	29	Good	Good	Cockle, shorts, bran and corn fodder.....	Well	Good	Stock clean.
A. W. Johnson.....	Richfield.....	30	Fair	Good	Cockle, shorts, bran and corn fodder.....	Well	Good	Stock clean.
A. W. Bartholemew.....	Richfield.....	15	Good	Good	Cockle, shorts, bran and corn fodder.....	Well	Good	Stock clean.
Edward F. Erwing.....	Bloomington.....	10	Ex. good	Good	Corn, shorts and clover hay.....	Well	Good	Stock clean.
A. Dill.....	Bloomington.....	50	Good	Good	Ground cockle and corn fodder.....	Well	Poor	Stock clean.
John Haig.....	Bloomington.....	4	Good	Good	Ground cockle, oats and hay.....	Well	Poor	Stock clean.
James R. Dean.....	Bloomington.....	28	Good	Ex. good	Ground cockle and corn fodder.....	Well	Good	Stock clean.
David Haig.....	Richfield.....	18	Good	Good	Ground cockle and corn fodder.....	Well	Good	Stock clean.
H. S. Fitch.....	Bloomington.....	25	Good	Good	Ground cockle and corn fodder.....	Well	Good	Stock clean.
E. E. King.....	Bloomington.....	18	Good	Good	Ground cockle and hay.....	Well	Good	Stock clean.
James Tierney.....	Richfield.....	16	Good	Good	Bran, shorts and hay.....	Well	Poor	Gen'l appear'ce dirty.
L. L. Humphrey.....	47th st. and Chicago av.....	20	Good	Poor	Ground cockle and hay.....	Well	Good	Stock clean.
M. H. Kelley.....	38th st. and 3d av. S.....	18	Good	Good	Ground cockle and hay.....	Well	Good	Stock clean.
Stephen Olson.....	36th st. and 1st av. S.....	3	Good	Good	Bran, shorts and hay.....	Well	Poor	Stock clean.
J. A. Wile.....	Bloomington.....	10	Good	Poor	Bran, shorts and corn fodder.....	Well	Good	Stock clean.
Robert Oxburg.....	Bloomington.....	13	Good	Good	Cockle, shorts and corn fodder.....	Well	Good	Gen'l appear'ce neat.
Joe Ream.....	Bloomington.....	10	Very gd	Good	Bran, corn meal and hay.....	Well	Good	Stock clean.
Henry Kell.....	Edina.....	10	Good	Good	Cockle, bran and shorts.....	Well	Good	Stock clean.
Frank Wilson.....	Douglas Park.....	78	Good	Good	Cockle, shorts and wild hay.....	Well	Good	Stock clean.
A. D. Sewald.....	Riverside and 25th st. S.....	18	Excl't	Good	Cockle, shorts, bran and corn fodder.....	Well	Good	Stock clean.
J. N. Hanson.....	Emerald av. & Lake st.....	32	Poor	Good	Cockle, shorts and hay.....	Well	Ex. good	Stock clean.
Pearson & Larson.....	34th st. & Riverside av.....	25	Good	Good	Cockle, shorts and hay.....	Well	Good	Stock clean.
Olson & Olson.....	Lake and 42d st.....	29	Good	Good	Cockle, shorts and hay.....	Well	Good	Stock clean.
A. Carlson.....	3320 31st av. S.....	17	Good	Good	Cockle, shorts and hay.....	Well	Good	Stock clean.
A. J. Larson.....	3320 31st av. S.....	28	Poor	Good	Cockle, shorts and hay.....	Well	Poor	Stock clean.
Ole Johnson.....	2820 32d av. S.....	14	Good	Good	Cockle, shorts and hay.....	Well	Poor	Stock clean.
Ole Young.....	2921 32d av. S.....	13	Good	Good	Cockle, shorts and hay.....	Well	Poor	Stock clean.
Chas. Syrene.....	3119 Lake st.....	14	Good	Good	Cockle, shorts and hay.....	Well	Poor	Stock clean.
E. Grunnet.....	2825 31st av. S.....	10	Good	Poor	Shorts, bran and hay.....	Well	Poor	Stock clean.
M. Selerson.....	2818 31st av. S.....	7	Good	Poor	Cockle, shorts, bran and hay.....	Well	Poor	Stock clean.
Louis Nelson.....	2917 32d av. S.....	25	Good	Good	Cockle, shorts and hay.....	Well	Poor	Stock dirty.
Peterson & Nelson.....	Cor. Lake and 34th stis.....	27	Good	Good	Cockle, shorts and hay.....	Well	Poor	Stock dirty.
Hanson & Nelson.....	Riverside and 25th.....	19	Good	Good	Ground cockle and hay.....	Well	Good	Stock clean.

Louis Drungerson....	23	Good....	Good....	Ground cockle and corn fodder....	Well....	Ex. good....	Stock clean.
H. P. Hanson....	25	Good....	Good....	Shorts, bran and corn fodder....	Well....	Ex. good....	Stock clean.
Ole Johnson....	34	Good....	Good....	Cockle, bran and corn fodder....	Well....	Poor....	Stock clean.
Chas. Hohage....	20	Good....	Good....	Bran, shorts, corn and corn fodder....	Well....	Ex. good....	Stock clean.
A. T. Palmer....	10	Ex. good....	Good....	Ground feed and hay....	Well....	Good....	Gen'l appear'e clean.
John Bradbury....	15	Good....	Good....	Cockle, shorts, bran and hay....	Well....	Good....	Stock clean.
Nels S. Nelson....	34	Good....	Good....	Cockle, shorts, bran and corn fodder....	Well....	Good....	Stock clean.
Martin Dietlefson....	14	Poor....	Good....	Bran, shorts and hay....	Well....	Poor....	Stock clean.
John Mahony....	25	Good....	Good....	Bran, shorts and hay....	Well....	Good....	Gen'l appear'e clean.
James Davis....	18	Ex. good....	Good....	Bran, shorts, corn fodder & clov. hay....	Well....	Good....	Stock clean.
James Comstock....	21	Ex. good....	Good....	Cockle, bran and corn fodder....	Well....	Good....	Stock clean.
Orlando Dean....	12	Ex. good....	Ex. good....	Cockle, bran and cornfodder....	Well....	Good....	Stock clean.
N. Erickson....	35	Good....	Ex. good....	Cockle, bran and cornfodder....	Well....	Good....	Stock clean.
C. H. Gilchrist....	18	Poor....	Good....	Cockle, bran and hay....	Well....	Good....	Stock dirty.
S. P. Finlanson....	23	Good....	Good....	Bran, shorts and hay....	Well....	Good....	Stock clean.
J. J. Lohse....	40	Good....	Good....	Cockle, shorts and hay....	Well....	Good....	Stock clean.
O. A. Nordberg....	32	Ex. good....	Ex. good....	Cockle, bran, shorts and hay....	Well....	Good....	Stock clean.
P. H. Peterson....	21	Ex. good....	Ex. good....	Cockle, cornfodder, cornmeal, hay....	Well....	Good....	Stock clean.
C. Ewald....	21	Good....	Poor....	Cornmeal, shorts, bran and hay....	Well....	Good....	Stock clean.
M. D. Brown....	31	Ex. good....	Ex. good....	Bran, shorts, cockle and hay....	Well....	Good....	Stock clean.
Rice Lake....	13	Good....	Good....	Bran, shorts, cockle and hay....	Well....	Good....	Stock dirty.
Edgewood Farm....	25	Good....	Poor....	Bran, shorts, cockle and hay....	Well....	Poor....	Stock dirty.
Rice Lake....	25	Good....	Good....	Bran, shorts, cockle and hay....	Well....	Good....	Stock clean.
Near Rice Lake....	24	Good....	Good....	Bran, shorts, cockle and hay....	Well....	Poor....	Stock clean.
Near Rice Lake....	35	Good....	Good....	Bran, shorts, cockle and cornfodder....	Well....	Good....	Stock clean.
Richfield nr. Mother L....	33	Good....	Good....	Ground cockle and cornfodder....	Well....	Good....	Stock clean.
42d st and 23d av s....	35	Ex. good....	Good....	Ground cockle and cornfodder....	Well....	Good....	Stock clean.
Rice L. 21st av and 42d st....	26	Good....	Good....	Ground cockle and cornfodder....	Well....	Good....	Stock clean.
Hopkins Station....	28	Good....	Good....	Cockle, shorts and hay....	Well....	Good....	Stock clean.
N. P. Peterson....	42	Good....	Poor....	Cockle, shorts and hay....	Well....	Poor....	Stock clean.
Hopkins....	18	Good....	Good....	Cockle, shorts and hay....	Well....	Good....	Stock clean.
Frank Sokarason....	49	Good....	Good....	Cockle, shorts and hay....	Well....	Good....	Stock clean.
C. D. Byrnes....	50	Good....	Good....	Cockle, shorts and hay....	Well....	Good....	Stock clean.
Minnetonka Mills....							
Nelson & Molsted....							
T. E. Koppenburg....	8	Good....	Poor....	Cockle, shorts and hay....	Well....	Poor....	Stock dirty.
Anderson Bros....	80	Good....	Good....	Cockle, shorts and hay....	Well....	Poor....	Stock dirty.
S. Johnson....							
St. Louis Park....							
St. Louis Park....							
kins road....	12	Good....	Poor....	Ground feed, shorts and hay....	Well....	Poor....	Stock dirty.
St. Louis Park....	45	Good....	Good....	Ground feed, shorts and hay....	Well....	Good....	Stock clean.
Edina Mills....	47	Good....	Good....	Bran, shorts, oilmeal and hay....	Well....	Good....	Stock clean.
Edina Mills....	43	Good....	Good....	Bran, shorts, oilmeal and hay....	Well....	Good....	Stock clean.
Cedar Lake road....	49	Good....	Poor....	Ground cockle, shorts and hay....	Well....	Poor....	Poor place for keep- ing milk.
Cedar Lake road....	24	Good....	Poor....	Ground cockle, shorts and hay....	Well....	Poor....	Stock dirty.
Cedar Lake road....	14	Good....	Poor....	Ground cockle, shorts and hay....	Well....	Poor....	Stock dirty.
Cedar Lake road....	18	Good....	Poor....	Ground cockle, shorts and hay....	Well....	Poor....	Stock dirty.
Cedar Lake road....	45	Good....	Good....	Ground cockle, shorts and hay....	Well....	Poor....	Stock clean.
Chr. Johnson....	23	Good....	Poor....	Ground cockle, shorts and hay....	Well....	Poor....	Stock clean.
A. Busse....	20	Good....	Good....	Ground cockle, shorts and hay....	Well....	Good....	Stock clean.
P. Engwald....	23	Good....	Good....	Ground cockle, shorts and hay....	Well....	Good....	Stock clean.
Cedar Lake road....	23	Good....	Good....	Ground cockle, shorts and hay....	Well....	Good....	Stock clean.
C. Hanson....							
D. Sullivan....	28	Good....	Good....	Ground cockle, shorts and hay....	Well....	Good....	Stock clean.



## INSPECTION OF DAIRIES TRIBUTARY TO NINNEAPOLIS,—Continued.

NAMES.	Location.	No. of cows.	Condit'n of cows.	Condit'n of barn.	Kind of feed.	Kind of water.	Ventilation	Remarks.
L. Pearson	Golden Valley	15	Good	Good	Ground cockle, shorts and hay	Well	Good	Stock neat.
S. Harold	Golden Valley	29	Good	Good	Ground cockle, shorts and hay	Well	Poor	Stock dirty.
Jordon Bros	Golden Valley	55	Good	Good	Malt, shorts and hay	Well	Good	Stock clean.
Nordgreen Bros.	Golden Valley	48	Good	Good	Cockle, shorts and hay	Well	Good	Stock dirty.
J. A. Webber	Golden Valley	23	Good	Good	Cockle, shorts and hay	Well	Poor	Stock dirty.
Robbinsdale	Robbinsdale	32	Good	Good	Cockle, shorts and hay	Well	Good	Stock clean.
Wickman & Lauren.	2700 24th av N.	30	Good	Good	Cockle, shorts and hay	Well	Poor	Stock clean.
J. E. Rowe.	19th av and Vincent st	29	Good	Ex-good	Cockle, cornfodder and hay	Well	Good	Stock clean.
Turner Bros.	Golden Valley	60	Good	Good	Cockle, shorts and hay	Creek	Good	Stock clean.
Christ, Nelson.	Golden Valley	54	Ex-good.	Poor	Bran, shorts, malt, cornfodder & hay	Well	Poor	Stock clean.
P. Swanson	Golden Valley	12	Good	Good	Ground cockle, shorts and hay	Well	Poor	Stock clean.
A. Anderson	Golden Valley	30	Good	Good	Ground cockle, shorts and hay	Well	Poor	Stock clean.
John Nelson	Plymouth av road.	12	Good	Good	Ground cockle, shorts and hay	Well	Poor	Stock clean.
Q. Verner	Wauertown road	31	Ex-good.	Good	Shorts, malt, cornfodder and hay	Well	Good	Stock dirty.
K. C. Knudson.	6th av road	30	Good	Good	Ground cockle, shorts and hay	Well	Good	Stock clean.
Knudson & Madison.	6th av road	24	Good	Good	Ground cockle, shorts and hay	Well	Good	Stock clean.
J. N. Krohn.	Kegans Lake	18	Good	Good	Ground cockle, shorts and hay	Well	Good	Stock clean.
J. E. Foss	Kegans Lake	54	Good	Poor	Ground cockle, shorts and hay	Well	Poor	Sanitary cond't'n bad
H. L. Anderson	Plymouth av road	51	Good	Good	Ground cockle, shorts and hay	Well	Good	Stock clean.
Charles Bauman	6th av & Watertown road	35	Ex-good.	Good	Ground cockle, shorts and hay	Well	Good	Stock clean.
H. R. Stillman	Crystal Village	12	Ex-good.	Good	Ground cockle, shorts and hay	Well	Poor	Stock dirty.
S. M. Parker.	Crystal Village	20	Good	Good	Ground cockle, shorts and hay	Well	Good	Stock clean.
Robert Hanson	Crystal Village	22	Good	Good	Ground cockle, shorts and hay	Well	Good	Stock clean.
Paul Winn	Johnson road	32	Good	Good	Ground cockle, shorts and hay	Well	Good	Stock dirty.
Erickson Bros	Crystal Village	23	Good	Good	Ground cockle, shorts and hay	Well	Poor	Stock clean.
P. S. Miller	Crystal Village	82	Good	Good	Malt, bran, cornfodder and hay	Well	Good	Stock clean.
R. C. Moser	Crystal Village	23	Good	Poor	Shorts, bran, cornfodder and hay	Well	Good	Stock clean.
Matt Shuler	Crystal Village	27	Good	Good	Ground cockle, bran and hay	Well	Good	Stock clean.
P. Behnen	Crystal Village	28	Good	Poor	Ground cockle, bran and hay	Well	Poor	Stock dirty.
Herbert Shuler	Crystal Village	21	Good	Good	Ground cockle, bran and hay	Well	Good	Stock clean.
Louis Kahn	10th st. and 35th st. N.	11	Poor	Bad	Only fermented malt	Slough water.	Poor	Stock dirty.
W. Greenstein.	36th ave, bet 9th and 10th st. N.	13	Poor	Poor	Malt with some shorts mixed	Slough	Poor	Stock dirty.
F. Baumgartner	Crystal Village	26	Ex-good	Good	Cockle, shorts, corn fodder and hay	Well	Poor	Stock clean.
Swan Anderson	Brooklyn.	40	Good	Poor	Cockle, shorts, corn fodder and hay	Well	Poor	Stk and stable dirty
Hogen Herdal	29th st. and Knox av. N.	11	Good	Good	Cockle, shorts, bran and hay	Well	Poor	Stock clean.
Holmstrom Bros.	Camden Place	19	Good	Good	Cockle, shorts, bran and hay	Well	Good	Stk and stable dirty

Joseph Covany.....	Brooklyn Centre.....	75	Good....	Good....	Cockle, shorts, bran and hay.....	Well....	Good....	Stock neat.
Paul Peterson.....	Brooklyn Centre.....	20	Good....	Good....	Cockle, shorts, bran and hay.....	Well....	Good....	Stock clean.
Chas. Peterson.....	Brooklyn Centre.....	18	Good....	Good....	Cockle, shorts, bran and hay.....	Well....	Good....	Stock clean.
Wm. Quiel.....	Brooklyn Centre.....	29	Ex. good	Good....	Cockle, bran, shorts and hay.....	Well....	Good....	Stock clean.
Boyeson & Raarup.....	Brooklyn Centre.....	28	Good....	Good....	Cockle, shorts, bran and hay.....	Well....	Good....	Stock neat.
Wm. Spence.....	Silver Lake Road.....	9	Fair....	Fair....	Bran, shorts and timothy hay.....	Well....	Good....	Stock clean.
Chas. Peterson.....	Silver Lake Road.....	20	Good....	Fair....	Corn meal, cockle and wild hay.....	Well....	Poor....	Stock clean.
Ole Foss.....	Silver Lake Road.....	28	Good....	Fair....	Bran, shorts and wild hay.....	Well....	Fair....	Stock clean.
Ed Ellison.....	Silver Lake Road.....	13	Good....	Fair....	Shorts, corn meal and timothy hay.....	Well....	Fair....	Stock clean.
B. W. Higgins.....	Silver Lake Road.....	48	Ex. Good	Ex. Good	Shorts, bran and timothy hay.....	Well....	Ex. Good	Stock clean.
F. Filbrook.....	Silver Lake Road.....	20	Good....	Good....	Timothy and wild hay.....	Well....	Fair....	Stock clean.
S. Kunze.....	Silver Lake Road.....	8	Good....	Good....	Bran, potatoes and timothy hay.....	Well....	Fair....	Stock clean.
A. Smiley.....	Silver Lake Road.....	33	Good....	Good....	Bran, shorts and timothy hay.....	Well....	Fair....	Stock clean.
H. G. Christianson.....	Silver Lake Road.....	35	Good....	Good....	Malt, oil meal, shorts and hay.....	Well....	Fair....	Stock clean.
John Peterson.....	Rosetown.....	48	Good....	Poor....	Malt, shorts, bran and hay.....	Well....	Poor....	Stock clean.
Skarnan & Kyllander.....	Como av.....	19	Good....	Poor....	Bran, shorts and wild hay.....	Well....	Fair....	Stock clean.
Hans Foss.....	East Side.....	22	Good....	Poor....	Shorts, cut straw and hay.....	Well....	Fair....	Stock clean.
D. McCullum.....	Long Lake Road.....	56	Good....	Good....	Bran, shorts, clover and timothy hay.....	Well....	Good....	Stock clean.
D. H. McEachern.....	Long Lake.....	66	Good....	Good....	Cockle and timothy hay.....	Well....	Good....	Stock clean.
E. Cooley.....	Rosetown.....	50	Good....	Ex. good	Cockle, shorts and timothy hay.....	Well....	Good....	Stock clean.
F. Peterson.....	Cemetery Hillside.....	40	Good....	Good....	Malt, shorts, bran and corn fodder.....	Well....	Ex. good	Stock clean.
C. W. Dorsett.....	Fairview.....	42	Ex. good	Good....	Bran, corn fodder and wild hay.....	Well....	Good....	Stock dirty.
Johnson & Peterson.....	Aurora Park.....	18	Good....	Poor....	Cockle.....	Well....	Poor....	Stock clean.
C. C. Fordice.....	637 Buchanan st. N. E.....	16	Good....	Good....	Bran, cockle and wild hay.....	Well....	Good....	Stock clean.
C. E. Hall.....	309 Buchanan st. N. E.....	22	Good....	Good....	Cockle, shorts and corn fodder.....	Well....	Good....	Stock clean.
Ed Trosett.....	1107 15th av. N. E.....	19	Good....	Poor....	Cockle and wild hay.....	Well....	Poor....	Stock dirty.
Ole Berg.....	Buchanan st. N. E.....	12	Good....	Good....	Cockle and wild hay.....	Well....	Fair....	Stock clean.
Knute Lee.....	1507 Buchanan st. N. E.....	15	Good....	Poor....	Cockle and wild hay.....	Well....	Poor....	Stock clean.
S. Swanson.....	32d av. and Bee st. N. E.....	12	Fair....	Good....	Shorts and wild hay.....	Well....	Poor....	Stock clean.
J. F. Johnson.....	326 Washington av. N. E.....	14	Good....	Good....	Bran, cockle and wild hay.....	Well....	Poor....	Stock clean.
John Christenson.....	2500 Central av. N. E.....	16	Good....	Good....	Oats, corn meal and wild hay.....	Well....	Poor....	Stock clean.
Mrs. M. Sorenson.....	2030 Polk st. N. E.....	12	Good....	Poor....	Cockle, bran and wild hay.....	Lake....	Good....	Stock dirty.
C. E. Davis.....	2535 Taylor st. N. E.....	13	Ex. good	Fair....	Cockle, bran and wild hay.....	Well....	Good....	Stock clean.
W. S. Wheeler.....	2714 Taylor st. N. E.....	17	Good....	Good....	Cockle, bran, shorts and hay.....	Well....	Good....	Stock clean.
H. M. Verrill.....	2719 Taylor st. N. E.....	19	Good....	Good....	Cockle, bran and corn fodder.....	Well....	Good....	Stock clean.
L. H. Hoyt.....	Fridley.....	46	Good....	Good....	Malt, cockle and wild hay.....	Well....	Good....	Stock clean.
John Miller.....	Fridley.....	16	Fair....	Fair....	Bran, cockle and wild hay.....	Well....	Fair....	Stock clean.
Peter Rasmussen.....	Fridley.....	24	Fair....	Good....	Ground feed, bran and wild hay.....	Well....	Fair....	Stock clean.
Chas. Thingley.....	Fridley.....	25	Good....	Good....	Bran, shorts and corn fodder.....	Well....	Good....	Stock clean.
Jens Hanson.....	Monkey Town.....	33	Bad....	Bad....	Bran, shorts, cockle and wild hay.....	Well....	Bad....	Stock dirty.
N. G. Hanson.....	32d av. and Anoka.....	14	Good....	Good....	Corn meal, shorts and wild hay.....	Well....	Fair....	Stock clean.
A. Davies.....	Fridley.....	27	Ex. good	Good....	Bran, cockle and timothy hay.....	Well....	Fair....	Stock clean.
Martin Davidson.....	Fridley.....	19	Foot....	Good....	Bran, cockle and wild hay.....	Well....	Good....	Stock clean.
John Rasmussen.....	Fridley.....	18	Good....	Good....	Bran, shorts and wild hay.....	Well....	Good....	Stock clean.
Peter Hanson.....	Fridley.....	45	Good....	Good....	Bran, corn meal, shorts, wild hay.....	Well....	Fair....	Stock clean.
C. Christoffer.....	Fridley.....	15	Good....	Fair....	Bran, corn meal, timothy hay.....	Well....	Ex. good	Stock clean.
Peter Anderson.....	Fridley.....	30	Good....	Good....	Bran, shorts, cornfodder, timothy hay.....	Well....	Good....	Stock clean.
Nelson & Anderson.....	Fridley.....	22	Good....	Poor....	Bran and wild hay.....	Well....	Bad....	Stock dirty.
Gus Lunde.....	Fridley.....							

## INSPECTION OF DAIRIES TRIBUTARY TO MINNEAPOLIS.—Continued.

NAME.	Location.	No. of cows.	Condit'n of cows.	Condit'n of barn.	Kind of food.	Kind of water.	Ventilation	Remarks.
P. Christenson	Fridley	22	Good	Good	Bran, shorts and wild hay	Well	Bad	Stock clean.
Ole Hawkinson	Fridley	22	Good	Poor	Bran, shorts, cockle and wild hay	Well	Good	Stock clean.
Peterson & Christenson	34th st. N. E.	31	Good	Good	Bran, shorts, cockle and wild hay	Well	Bad	Stock clean.
A. W. Fredericksen	Fridley	21	Ex. good	Good	Bran, shorts and clover hay	Well	Good	Stock clean.
A. Gullberg	Fridley	12	Poor	Fair	Cockle, bran and wild hay	Spring	Bad	Stock dirty.
A. S. Rosenthal	Fridley	48	Good	Good	Malt, corn fodder, timothy hay	S. & well	Good	Stock clean.
Riedel & Nelson	Fridley	104	Ex. good	Good	Bran, malt, shorts and wild hay	Well	Good	Stock clean.
Hans Johnson	Fridley	26	Good	Good	Shorts, bran, corn fodder, wild hay	Well	Good	Stock clean.
O. E. Holter	Fridley	37	Good	Good	Ground cockle and wild hay	Well	Good	Stock clean.
S. Knudson	Fridley	22	Good	Good	Bran, shorts, cockle and wild hay	Well	Good	Stock clean.
H. Christenson	Fridley	19	Fair	Good	Cockle and wild hay	Well	Poor	Stock clean.
J. Johnson	Lake Johanna	32	Good	Good	Bran, shorts and wild hay	Well	Poor	Stock clean.
C. Peterson	State Farm	16	Good	Good	Ensilage, meal, wild hay	Well	Poor	Stock clean.
Peterson	Desnoyer Park	6	Poor	Poor	Shorts, wild hay	Well	Poor	Stock dirty.
I. Fournier	University Av.	8	Good	Good	Bran, shorts, wild hay	Well	Good	Stock clean.



# REPORT OF THE WORK DONE IN THE ST. PAUL LABORATORY DURING THE FOURTH BIENNIAL PERIOD.

BY W. S. EBERMAN, CHEMIST.

HON. A. K. FINSETH, Dairy and Food Com., St. Paul, Minn.—SIR:—In transmitting the result of my work which is to be included in this report, it may be well to note some of the changes that have taken place. Since the issuing of our last biennial report some new laws have been enacted by the legislature. Of these we may notice the law regulating the sale of cottoline. This article which is supposed to be the product of the hog, comes principally from cottonseed oil. It was not that the compound was considered altogether unwholesome, that caused the enactment of the law, but the fact of its sailing under false colors. To prevent those wishing to buy pure lard from being deceived, was the real motive in having a cottoline law passed. It has served an excellent purpose, and our markets are now comparatively free from these imitation goods.

Another wise measure enacted by the legislature was the law compelling dealers in oleomargarine to have that article colored pink. While perhaps we have not been as successful in the enforcement of this portion of our law as we could have wished, yet it is a fulcrum which may be used to advantage in the enforcement of other laws. These additions to the law and the amendment of the vinegar statute prohibiting the artificial coloring of vinegar are the principal changes noted. Owing to the fact that no new lines have been explored, the chemist's work has been largely of a routine character.

In another portion of the report is given in tabular form the result of the work done by our inspectors in various towns throughout the State. The reader's attention is called to the fact that these tables represent the entire State inspection. The tables include all towns where food and dairy products were taken and samples sent to the St. Paul and Minneapolis laboratory for analysis.

TABLE OF GENERAL RESULTS.

ARTICLES.	Number of samples.	Pure.	Adulter'd or below St'd rd	How adulterated.
Milk .....	354	176	178	Skimmed and watered.
Butter .....	136	114	22	Oleomargarine.
Cheese .....	610	606	4	Skim and part skim.
Cream .....	18	11	7	Milk added.
Lard .....	319	309	10	Compound lard.
Baking powder .....	148	20	128	Alum and alum phosphate.
Vinegar .....	1,855	1,666	189	
Liquors .....	16	11	5	Deficient in alcoholic strength.
Beer .....	17	17	.....	
Coffee .....	10	1	9	Chicory, peas, meal, etc.
Sugar .....	10	1	9	Glucose.
Syrup .....	7	.....	7	Glucose.
Allspice .....	11	2	9	Foreign ingredients, shells, etc.
Cloves .....	7	.....	7	Stems, shells, deficient in volatile oil.
Cinnamon .....	8	3	5	Cassia, ground shells, etc.
Ginger .....	12	6	6	Meal, mustard, cayenne pepper.
Mace .....	3	3	.....	
Mustard .....	11	3	8	Cornmeal, starch, turmeric.
Pepper .....	13	4	9	Stems, pepper dust and shells.
Cream of tartar .....	16	6	10	Terra alba, starch, etc.
Drugs and medicines .....	102	63	39	
Eggs .....	2	.....	2	Gelatine, sulphur, turmeric, etc.
Honey .....	4	3	1	Glucose.
Totals .....	3,683	3,022	661	

The foregoing tables thus show a portion, at least, of the work accomplished in the interest of pure foods in this State. To recapitulate:

It will be seen by these tables that 172 towns have been inspected. In examining the totals of the various columns we find there have been taken and analyzed of milk 354 samples, butter 136, cheese 610, lard 319, baking powder 148, vinegar 1,855, cream 16, and miscellaneous 2,390; making a total of 3,683 samples analyzed in the St. Paul laboratory.

We are now ready to proceed with and inquire into the character of these 3,683 samples of food and drink which have been submitted to analyses.

*Milk*:—There were 354 samples of milk; of this number 176 proved to be pure and 178 illegal or adulterated. It is to be hoped that no one will for a moment think that the figures just given argues against the consumer being supplied with a pure article of milk. All samples of milk taken by our inspectors are submitted to the "Babcock test," if the milk comes up to the standard, i. e., 3.50 per cent. of fat, it is of a legal quality and no further examination is considered necessary. If, however, the milk by the Babcock test does not show 3.50 per cent. of fat, the samples are then submitted to a complete chemical analysis, the specific gravity being taken in every instance. By adopting this method a great number of samples of milk can be accurately examined in one day, and at the same time we arrive at most satisfactory results. Therefore, the samples submitted to the chemist for analysis are those that fall below the standard by the Babcock test. The number running below is only a small fraction of the thousands of samples of milk that are taken by the inspectors, and which are found to be of a satisfactory character.

*Butter*:—During the period included in our report we have analyzed 136 samples of butter; of this number 22 proved to be oleomargarine and one a combination of beef tallow and butter.

*Cheese*:—In the product of cheese there were analyzed 610 samples. Of this number two proved to be skim, and two part skimmed.

*Lard*:—Since a thorough system of inspection was inaugurated by the department, the quality of lard has very generally improved. There have been analyzed 319 samples, 10 of this number proved to be compound lard, the lard being composed of cottonseed oil and stearine.

*Baking Powder*:—Of the 148 samples of baking powder analyzed, 18 of the number I found to be composed of pure cream of tartar, 10 were tartaric acid or tartrate powders, two were acid phosphate, and four phosphate and lime powders, 32 were an alum phosphate, and 82 were an ammonium alum powders.

*Vinegar*:—Regarding the vinegar of the market, I have analyzed 1,855 samples. They are classed as follows: There were 684 samples of cider vinegar. Of this number 570 were pure, and 114 adulterated. In white or low wine vinegars there were 646 samples. Of these 573 were of legal standard and 73 samples illegal. There were analyzed 19 samples of malt vinegar, two of this number were illegal. There were 8 of grape vinegar, 8 of beet and 2 of honey all of required standard. Owing to the fact that colored wine vinegar was allowed to be sold in our State prior to August 1st, 1891, we have here to present a large number of samples of colored wine vinegars. There have been collected and analyzed 462 samples, also 26 samples of "combination" vinegar, i. e., low wine and cider vinegar

mixed, of a miscellaneous character. I have examined the following, to which the reader's attention is invited further on in this report. There were analyzed 7 samples of brandy, 4 of whiskey, 5 of wine and 2 of beer; 10 of coffee, 7 syrups, 10 sugar, 11 allspice, 7 cloves, 8 cinnamon, 12 ginger, 11 mustard, 13 pepper, 3 mace, 16 cream of tartar, and 102 samples of drugs and medicines.

Tables of analysis of the miscellaneous articles will be found further on in the report.

#### MILK.

Mysterious indeed is the process which milk undergoes. Two small glands are brought into requisition in the elaboration of the cow's milk. These two glands may easily be separated without injury to either. Now in the production of this very important article of food, physiological process is gone through about which mystery still clings.

We are aware of the fact that the blood plays an important part. If this be true, then the dairyman should see to it that his cows have the best of feed, the purest water, and shelter which is in every way comfortable. As the system of the cow becomes deranged her milk of necessity must be of an inferior quality.

Complaints frequently have been made during the past few months to this department, of milk becoming bitter. Not only was there a bitterness to the milk, but proprietors of creameries were annoyed by the unchurnability of the cream. That is, the cream would not make butter. Relative to this, the reader is referred to the article on butter.

At this point I desire to call attention to the matter of "bitter milk." Dr. Conn, in treating upon this subject, says that bitter milk is caused by a distinct species of bacteria. Another species renders milk slimy, another favors alcoholic fermentation, another rancidity.

Milk curdled while sweet is changed by a certain kind of bacteria.

Other forms affect the color of milk, one renders it red, another amber, and a third gives it a lemon color. Green and light blue are also due to two species of bacteria. These, says the doctor, are quite rare, but may strike a territory under favorable conditions. There are also numerous kinds acting as ferments. Dr. Conn does not impute the trouble to the kind of food or water taken by the cow.

Bacteria gets into the milk after it is drawn. The mischief there begins and there it usually ends.

An onion or a turnip taste in the milk may be due to eating onions or turnips, but those tastes are not fermentation. Ensilage at one time, was considered a food that would cause fermentation in milk, but those were wrong conclusions. Ensilage will not ferment milk by the feeding

If ferments affect the milk, the injury is due to the ferments getting into the milk after it is drawn. The milkman may have handled ensilage and then sat down to milk without washing his hands. The germs will readily fall from his hands into the milk, where, with wonderful rapidity they multiply. Cows eating poor meadow hay may give slimy milk, but the germs fall direct from the dust of the hay to the milk pail.

Thus all abnormal fermentations are due to outside influences. With disease germs the case is different. Tuberculosis bacilli are generated in the body of the cow.



The commercial and food value will always make milk a subject of general interest. It is an article of diet so universally used that its good qualities are well worth our consideration. If bad qualities exist in milk, those are features that demand and ought to have immediate attention. The general use and intrinsic value of milk has awakened an interest among scientists, investigators and practical dairymen, such as history never before has known. The past decade has furnished more practical men, and given us more light along this line, than were given in the ten preceding decades.

With the exception of a few invalids who are strictly confined to milk as a diet, the major portion of the consumers desire a wholesome, rich article. Children especially require milk rich in fats and milk sugar. If there is an absence of these two important constituents, it is an evidence of more than the necessary amount of caseine, which is detrimental to health, and often is the prime cause of sickness and death.

The many thousand samples of milk which have been taken and analyzed is convincing proof of the purity of this article.

So small is the percentage of adulteration in milk that consumers as a rule, need not trust Providence less but their milkmen more. If doubts and misgivings they must have, those misgivings might be along the unsanitary lines of the dairyman. Your milkman may be the most honest man in town, and he also may be as ignorant as a Hottentot regarding rules of sanitation. This state of affairs is not the rule. But in every large community where dairymen are plenty, there are exceptions. These "exceptions" are what consumers need to guard against carefully. With all the vigilance and care of a practical painstaking dairyman, accidents will occur, not only accidents, but there are millions of unseen enemies constantly at work tearing down and rapidly destroying the dairymen's property, whether it be represented in milk, butter or cheese. Milk is the most susceptible to the work of these foes. They come in the form of microbes, spores or bacteria, from odors foul, and stench of so many degrees that a high school graduate would be completely confused in the declination of them. Their medium is that of the air we breathe, and nothing is more quickly attacked than fresh, sweet milk. The typhus fever, which that eminent physician, Dr. Cyrus Edson, of New York, considers far more dangerous than cholera, is disseminated rapidly by the medium of milk. The typhoid fever that raged to such an alarming extent this summer at Springfield, Mass., was traced by the health officers of that State to the milk supply. Sixty cases broke out where the supply had been received from one retailer, who, in turn, got it from three dairies. It was noted by the inspector that the milk which came from one of these places was left at the doors of houses where cases of fever had been reported. The farmer who originally sold the milk was then visited. It was learned that there had been a case of fever in his family last February. It was also ascertained that the drainage near this farmer's house was bad. Much poisonous matter had made its way into the well in which the milk cans had been cooled. It was not astonishing to learn that these milk cans were not water tight, and that they were the source of the contagion. This was proved conclusively by the fact that when the milk supply from that quarter of the town where the fever raged, was cut off, the terrible disease quickly abated.

There is another evil that ought to be remedied. That is the allowing of milch cows to drink from stagnant pools of water. All the germs of disease are there gathered, and it only becomes necessary for the cow to drink of this water whence these same disease germs, unhealthful bacteria, as the biologist would call them, are transmitted to the human family. While in many states and in many cities, adulteration is practiced to a very large extent, it is a pleasure to report that from these forms of duplicity our dairymen are comparatively free. As for instance the free use of the pump. Then follows the addition of coloring matter. This is in the form of a pigment, or a vegetable substance called annatto. While this latter might not be considered deleterious to health, nevertheless it is a piece of gross deception and ought not to be tolerated. The most reprehensible form of adulteration is the adding of preservatives to milk. The basic principles of these preservatives, are borax, boracic acid soda and salicylic acid.

All leading chemists both in the United States and abroad have declared that the use of these preservatives is detrimental to health.

After treating in a concise and careful manner the causes of fermentation of milk, "fermentation of milk by rennet," "the souring of milk," "other forms of fermentation of milk," "alkaline fermentation of milk," "butyric acid," "bitter milk," "blue milk," "alcohol fermentation of milk," "slimy fermentation of milk," Prof. Conn gives the miscellaneous forms of fermentation. With reference to these miscellaneous forms of fermentation the Prof. says: Very little is known beyond the mere fact of their existence. The fact is, milk is an excellent medium for bacteria. It furnishes food for all of the bacteria connected with decomposition and the various organizations of the air or the water may grow in it to almost any extent. The study of its fermentative changes resolves itself therefore into the study of fermentation in general. Fermentation, decomposition, putrefaction, etc., will all run into each other in the study of the changes occurring in milk, and it is impossible to draw any line separating them. For a complete knowledge of the fermentation of milk, we must wait until we understand thoroughly the process of fermentation and decomposition in general. At present this is an almost unknown field. We can pick out a few of the simpler, more striking types of fermentation and group them into classes as we have done, but we must leave for future study the miscellaneous forms of decomposition, whose existence we recognize, but of whose nature we are entirely ignorant.

The further study of the subject shows "that all fermentations of milk, even the common souring, are due to the contamination of the milk with something from the exterior after it is drawn from the cow." To guard against, and so far as possible, to prevent this state of affairs, the milk, says Prof. Conn, "Should be treated in such a way that no such contamination is permitted." He further recognizes the fact that no practical method can be devised for keeping out these various organisms which affect milk. The person who handles milk must reduce these organisms to the smallest number, and keep their growth within the smallest possible compass.

Further on in this excellent work he says: "The bacteria which have gotten into the milk will therefore have the very best opportunity for the rapid multiplication and the milk will sour very quickly."

A practical knowledge of this fact will be of great value to every person handling milk. Early cooling to as low a temperature as practicable is the best remedy for the too rapid souring of milk. In the conclusion of this most valuable article on the fermentation of milk, Prof. Conn says: If therefore a dairyman has trouble in his milk, which appears immediately after milking, he may look for the cause in something that the cow has eaten, but if the trouble after a few hours grows rapidly worse until it reaches a maximum, he may be assured that the cause is some form of fermentation and that the remedy is to be sought not in changing the food of the cow, but in greater care in the management of the dairy barn.

The following described device is in use by the milk peddlers in Berlin, Germany, to prevent the separation of cream from the milk through the motion of a wagon. A large conical shaped piece of tin perforated with holes as large as a quarter at the small end and smaller holes at the larger end is inserted point upwards in each can. It is claimed by the Berlin milkmen that by the use of this simple contrivance the milk at the bottom of the can after a day in the wagon will be as rich as the first drawing in the morning. Milk in Berlin is sold for  $5\frac{1}{4}$  cents a litre (a litre is a small fraction more than a quart.)

#### THE BABCOCK MILK TESTER.

It is almost unnecessary for me to state that the Babcock milk test is in universal use throughout the United States. Not only here but in Canada does the Babcock test meet with general approval. Our Experiment Stations as a rule have adopted the Babcock method for the estimation of fats in milk, and go where you will among the creameries and cheese factories, you will find the Babcock test doing its work satisfactorily.

For preliminary work in the laboratory, such as the estimation of the fat in milk, it stands to-day without a rival. We are aware that this little machine does not receive high commendation from that august body, The Society of English Analysts, neither does it meet their approval. In fact two of their number have condescended to make some analyses with the machine. Their results were, however, far from satisfactory. France and Germany have not gone into ecstasies over the simple American invention.

While the "Babcock" is simple in construction, and easy to operate, there are certain rules that cannot be ignored. It is now two years since we first placed one in our laboratory. In this time there are several points which I have learned, and certain which the operator must carefully observe.

The first in importance, is the proper calibrating of the bottles. The next is their cleanliness. These being well cared for, the quality and strength of the sulphuric acid should be noted. If too strong, or too much acid is used, there will appear in the neck of the bottle, and mixed with the fat, a thick, viscid, brownish substance. This substance is in part casein, but principally milk sugar, the white deposit at the bottom being sulphate of lime. In the operation of the machine I have noticed also that the water used in raising the fat into the neck of the bottle should be not less or even more than 130 degrees Fahrenheit.

With these rules carefully adhered to, the results as given below were obtained. It may also be noted in this connection that the Babcock test has been largely operated by our inspectors, who are not chemists, neither do they make any pretensions to that branch of science.



TABLE OF RESULTS  
Compared with the Babcock Milk Tester.

No.	Babcock.	Gravimetric.	Number.	Babcock.	Gravimetric.
1	3.40	3.50	63	2.90	2.80
2	3.40	3.50	64	3.00	2.80
3	4.00	4.00	65	2.80	2.90
4	3.90	4.00	66	3.00	2.80
5	3.60	3.70	67	3.00	2.80
6	4.60	4.90	68	2.90	2.80
7	4.50	4.60	69	3.00	2.90
8	3.00	3.00	70	2.80	2.80
9	4.60	4.70	71	2.80	2.60
10	3.60	3.60	72	3.00	3.20
11	3.90	4.00	73	2.70	2.50
12	4.00	4.16	74	2.90	2.70
13	3.60	3.70	75	3.00	2.90
14	3.90	4.00	76	3.10	2.80
15	4.00	4.00	77	3.00	2.90
16	3.50	3.50	78	3.00	3.00
17	4.00	4.00	79	2.80	2.80
18	3.50	3.50	80	2.95	2.80
19	3.80	4.00	81	3.00	3.00
20	3.50	3.50	82	3.10	2.90
21	3.05	3.10	83	2.75	2.80
22	3.20	3.40	84	2.90	2.70
23	3.20	3.46	85	3.20	3.10
24	3.50	3.60	86	3.00	3.10
25	3.10	2.94	87	2.80	2.74
26	2.90	3.06	88	3.00	3.20
27	3.20	3.34	89	3.00	2.96
28	3.40	3.60	90	3.10	3.08
29	3.50	3.66	91	3.10	3.05
30	3.40	3.30	92	3.20	3.20
31	3.00	3.00	93	2.40	2.30
32	3.20	3.40	94	3.00	3.00
33	3.40	3.50	95	2.40	2.45
34	2.80	3.06	96	2.70	2.70
35	2.65	2.60	97	2.65	2.80
36	3.00	2.80	98	2.80	2.80
37	3.00	3.10	99	2.60	2.64
38	3.10	3.30	100	2.90	2.90
39	3.20	3.10	101	2.40	2.46
40	3.20	3.30	102	3.05	3.10
41	2.50	2.50	103	2.80	2.80
42	3.10	3.20	104	2.00	1.99
43	3.10	3.10	105	2.75	2.90
44	3.20	3.20	106	3.10	3.20
45	2.85	2.94	107	2.30	2.50
46	2.85	3.10	108	2.50	2.70
47	3.15	3.24	109	2.70	2.80
48	3.00	3.10	110	2.55	2.50
49	3.50	3.40	111	2.70	2.90
50	2.25	2.30	112	2.95	3.00
51	3.40	3.60	113	2.45	2.54
52	2.70	2.80	114	2.85	3.10
53	3.00	3.00	115	2.85	3.00
54	2.80	2.90	116	2.80	2.80
55	2.60	2.50	117	2.80	2.90
56	3.20	3.20	118	2.40	2.50
57	3.20	3.06	119	2.90	3.00
58	2.50	2.44	120	2.80	2.76
59	3.10	3.30	121	4.60	4.70
60	2.60	2.90	122	3.70	3.70
61	3.20	3.46	123	3.65	3.80
62	3.10	3.20	124	3.70	3.70

## THE BABCOCK TEST.

The samples of milk which were first submitted to the Babcock test, and then to chemical analyses come in their order in my laboratory note book.

It will be observed that in the testing of the 124 samples of milk, there is a difference ranging from 0 to 0.3 per cent. Twenty-five samples, or 20 per cent., were accordant with the chemical analyses. Sixty-four of the samples gave a higher percentage of fats, and thirty-five a lower percentage. The average difference being twelve hundredths of one per cent.

## BUTTER.

Since the issue of our last biennial report but little new literature on the subject of butter has appeared. Creameries and dairies through the state are adopting new apparatus, and some new methods have been devised. The principal changes, however, which have taken place in the creamery has been the separator system. That seems to have taken precedence over the gathered cream system. Regarding the method of separating cream from the milk, attention is called to an article which appeared in the "Farmer's Home Weekly:"

At one of the dairy schools in England one farmer could not be made to believe that the hand separator was a more efficient method of creaming milk than the old-fashioned way. To satisfy himself he brought in one hundred pounds of new milk. This was equally divided. He managed one part, setting it in pans and skimming it himself. The other was run through a De Laval separator. The cream from both lots, when ripened, was churned under similar conditions. The separator cream made 13 ounces the most butter, or about 27 per cent. This is an excessive difference—more than it should be if the gravity creaming had been reasonably efficient; but it shows that very positive opinions are not always based upon facts, and that "bull-headedness" is sometimes an expensive luxury.

During the last three or four years there has been considerable investigation, and much experimentation with reference to sweet cream butter. In Illinois, Iowa, Vermont and Texas, very careful experiments have been made, comparing sweet with sour cream butter. For the benefit of many of the readers of our report, I herewith give the results lately obtained at the Iowa Agricultural College:

The objects of the work were to compare the sweet cream and the sour cream methods of butter making, with reference to the following points:

1. Relative losses of butter fat.
2. Relative amounts of butter produced.
3. Relative keeping qualities of the butter.
4. Relative amounts of casein in the butter.

The work was done between January 13 and April 8, 1892. Nine different experiments or comparative trials were made, all conducted on the same general plan, which was as follows: A quantity of sweet cream, fresh from the (Alpha) separator, was thoroughly mixed and then accurately divided by weight into two equal parts; one of these parts was churned immediately (or in some cases after keeping cool and sweet over night with ice—about 16 hours); the other was ripened at 60 deg. Fahr. for 24 to 48 hours, and then churned; the buttermilk was tested for fat by the Babcock test, and in a few cases the wash-water and drippings from the working table were also tested; the butter was regularly analyzed at the laboratory, and in one case—as a check on the other work—the cream also was analyzed.

In each trial the two kinds of butter received the same amount of salt and the same amount of color.

Four 10-lb. tubs of the butter produced—two of each kind—were held in cool storage, at about 50 deg. F., in order to compare keeping quality. \* \* \*

## SUMMARY.

[Sweet cream churned at 50 to 54 deg., sour cream at 58 to 60 deg.]

1. The yield of butter from sour cream was usually larger than from sweet; in nine trials it averaged 3 per cent. larger.

2. Sour cream usually churned quicker than sweet.

3. The butter from sour cream usually contained less fat and more water than did that from sweet cream. In four trials the average difference in fat was nearly 2 per cent.

4. The butter from sour cream usually contained a trifle more casein than did that from sweet. This was the case in eight of the nine trials made. The average difference was .2 of one per cent.

5. The losses of fat in churning, washing and working were less with sour than with sweet cream. In nine trials the average difference was nearly one-half pounds of fat per 100 lbs. of butter made. This difference was sufficient to make the loss about 50 per cent. greater in churning sweet than in churning sour cream.

6. The sweet cream butter suffered less deterioration by keeping five months (at a temp. of about 50 deg) than did the sour cream product. The former acquired in a measure the flavor and aroma of ripened cream butter. [These results fully confirm those obtained by one of us in 1890, in an experiment made jointly by the Station and Mr. J. M. Daniels, of Dayton, Iowa. See bulletin No. II.]

7. Sweet cream butter did not "take" the color (oil color, Fargo's) as well as did that from sour cream; it was always some shades lighter in color.

In four of the nine experiments the butter was analyzed, with the following results:

	From sweet cream.	From sour cream.
Water, per cent.....	12.41	13.98
Fat, per cent.....	82.40	80.66
Casein, per cent. ....	.85	1.06

In Prof. W. H. Conn's excellent work on milk fermentations and their relations to dairying, there is much to be found that is of value to the practical butter-maker.

We learn as a result of his investigations, the bacteria in milk prove to be friends instead of enemies of the butter-maker. After the cream is separated from the milk, it proves of advantage to the butter-maker to allow bacteria to grow in it before churning. There are advantages to be gained in such ripening. He finds that the cream will churn more easily and that he can get a larger amount of butter from a given amount of cream if it is ripened than he could if it were churned while fresh. He finds further—and this is perhaps the chief value of ripening cream—that the butter made from ripened cream has a flavor superior to that made of sweet cream. To obtain the proper flavor or aroma, is one of the chief objects of the butter-maker. It is noticed that the aroma is undoubtedly connected with the decomposition of bacteria growth. The volatile acids supposed to give flavor to the butter are not present in fresh milk, but only appear after standing, *i. e.*, after the fermentations have begun.



For a time it was thought the aroma of butter was due to some alcohol-like product formed during the ripening, or to the presence of lactic acid itself. In accordance with this last idea lactic acid has been used artificially to ripen cream, but without much success.

Of course, after we have learned that micro-organisms have been forced to grow in cream during the ripening, and when we combine this with facts which we have learned of the fermentation products of micro-organisms, we are led to believe that the ripening of cream is a more complicated process than the simple production of lactic acid.

One of the first to investigate this matter in the light of modern discoveries, was Storch, a Swedish scientist. He assumed that the butter aroma was due to the growth of organisms, and made a study of bacteria in butter and cream for the purpose of finding, if possible, the proper species of organism for producing the aroma. After diligent search he finally succeeded in isolating from ripened cream a single bacillus, which seemed to produce the proper aroma when it was used in pure culture to ripen cream. After a short time Weigmann studied the same phenomenon and also succeeded in obtaining cultures of an organism which produced a normal ripening and gave rise to a proper aroma. This ferment is coming into use in some of the creameries in Germany, the claim being made for it that it insures certainty in the result of the ripening process. It has not yet been introduced into this country for practical purposes. The value of such a ferment, if it can be supplied in a practical manner, is easily seen. It will introduce improvements into the creameries similar to those introduced into the breweries by means of the study of yeasts. Further on in this work it is also noticed that: The bacteria which grow in ripening cream have been found to produce all sorts of disagreeable flavors and tastes in the milk and cream if allowed to act unhindered. It seems to be only the first products of the decomposition giving rise to products of a very different character,

Too long in ripening resulted in the production of butter containing too strong flavors, and one of the difficulties of butter makers is to determine the right length of time for proper ripening. To obtain a uniform product is one of the most difficult problems with which the butter maker has to meet. Prof. Conn thus concludes his admirable treatise:

We may then perhaps predict a time in the not distant future when both the butter maker and cheese maker will make use of fresh milk. The butter maker will separate the milk by the centrifugal machine in as fresh a condition as possible and will add to the cream an artificial ferment consisting of a pure culture of the proper bacteria, and then ripen his cream in the normal manner. The result will be uniformity. The cheese maker will in like manner inoculate fresh milk with an artificial ferment, and thus be able to control his product. Perhaps he will have a large variety of such ferments, each of which will produce for him a definite quality of cheese. To the dairy interest, therefore, the bacteriologist holds out the hope of uniformity. The time will come when the butter maker will always make good butter, and the cheese maker will be able in all cases to obtain exactly the kind of ripening that he desires.

In the beginning of this article, attention was called to investigations made relative to sweet cream butter. In this country bacteriologists have not paid that attention to the culture of organism which Storch, the

Swedish and Weigmann the German scientist have given the subject. Much work of a practical nature, however has been done by some of the leading dairy chemists of our country. Of these we notice in particular, Profs. Harrington of Illinois, Patrick of Iowa, and Cooke of Vermont. Prof. Cooke has made his investigations of sweet and sour cream butter from an economical standpoint. His work was carefully and scientifically done, every point being well guarded. After a series of experiments with sweet and sour cream his conclusions were these:

He believed the argument to be in favor of churning cream sweet, in that it requires one less operation and consequently so, some less mechanical loss in the handling.

Our studies in mechanical loss at creameries have led us to believe that where five thousand or more pounds of milk are handled in a body, the entire mechanical loss from the weigh can to the butter tub is less than two per cent, and probably hardly more than one. Hence, by analogy the loss in any one operation must be rather slight. The question of the destruction or change of fat in the souring has already been treated, and the facts show that there is no change or loss whatever of fat in the souring of cream. If then there is no difference with the separation, no difference in the churning, washing and working, and only a slight difference in the extra fat sticking to the cream vat, there seems slight reason for believing that any more fat will be carried into the butter tub when the cream is churned sweet, than if allowed to sour.

An important part of the subject has remained untouched. Is it possible to incorporate more water into sweet cream butter, and have it stand up, be solid and satisfy the market, than is the case with sour cream butter? On this point I do not yet feel sure, but I believe that it is, that so far this constitutes a valid argument in favor of sweet cream butter. It should always be remembered that this extra water will cause the butter to spoil more quickly and will necessitate its early sale and consumption. Then to conclude Prof. Cooke adds: Hence I am led to believe, what has been impressed upon me continually by our practical work, that it is neither the churning sweet or the churning sour which influences the result, but the tools and the knowledge and experience of the one who is doing the churning. The taste of the consumer is to decide which method is best to follow—that if the consumer can possibly be induced to use butter made of sweet cream, that method should always be followed, on account of the large amount of butter that will be consumed and the consequent greater demand.

Mr. W. H. Gilbert, New York's greatest practical dairy authority, when asked regarding sweet cream butter, replied: It is in my opinion the coming "fancy butter." L. S. Hardin, of Indiana, another practical dairyman, says: When churned at a proper temperature I believe sweet cream will make as much if not more butter than decidedly sour cream, while all the highest priced butter in market is made from practically sweet cream, though for courtesy or argument's sake it may be called sour. An additional point in favor of sweet cream, is the claim that the butter continues to ripen and remains good longer. I think fine butter should be consumed before it has time to deteriorate, and if marketed with intelligence it always will be.

After having studied much this question of sweet cream butter, and gleaned from a large field of authors, I cannot leave the subject without referring the reader to what is said on the same point, two years ago in our biennial report:

Another radical revolution in the method of the manufacturing of butter is this: The making of butter from sweet instead of sour cream. In a paper read at the annual meeting of our State Dairy Association, held at Faribault two years ago, I advocated the manufacture of butter from sweet cream. The entire convention was arrayed against me, with the exception of one gentleman, and he a Dane. But the world moves. The sour, putrid cream butter is the butter of the past. Ripe, sweet cream butter is the butter of to-day, and will be the only butter used in the future. There are many obstacles to be overcome in the manufacture of good butter.

Laziness, carelessness and filthiness is a trio which has brought destruction and ruin to many a dairyman. Careless methods in the handling of cream and the care of butter may not be readily detected by chemical analysis. If the quality is there, which consists of flavor, texture and color, it will readily be detected by the eye and the olfactories.

This quality does not and cannot appear in chemical analysis; as well might the chemist undertake to analyze the beauty and bouquet of a rose.

Butter literature is becoming voluminous. Never were so many minds occupied in the study of this important dairy product as at present. Never were there so many men engaged in the invention of machinery for its better production, nor so many pens employed recording the final results.

#### CHEESE.

The demand for "Minnesota Full Cream Cheese" is a splendid index of what has been accomplished within the last four years by the dairy and food commissioner. Practically, we are free from all forms of adulterated cheese. There are a few "skims" and some of the "white oak" form, but their number is small. Our factories are turning out and our markets show that full creams are the favorites.

To place our factorymen where they will make for themselves a reputation, it is essential that they be progressive. The cheese maker of to-day who is content with what he did fifteen, ten or five years ago, will not be in demand a year hence. No branch of dairying has received the attention which has been given the past two years to cheese making. In fact, other branches have not required it. Only at the present time are cheese makers beginning to find out the deep hidden mysteries of their profession. Never before have cheese makers been so studious, thoughtful, methodical and exacting. It is really one of the most interesting occupations in which they can engage.

As the flood gates are opened and cheese literature comes pouring in, men begin to use their brains. Never before did they know that there was so much to learn about the manufacture of cheese. The man who made butter and cheese twenty-five years ago, now seeks the dairy school there to "unlearn" much that has been of positive injury to him in the past, and to begin with the A, B, C of dairying. Cleanliness, which begins with C, may be the first lesson. If he learns that well and goes out to practice it among his brethern, he will not have attended that



school in vain. After which comes the handling of the various improved utensils. Then his ingenuity is brought into requisition in the handling of the milk; the aeration of it, the cooling, the heating and making of the cheese.

The appearance of the cheese in whatever form may be desired does not end it all. Environment is to be studied. Sanitary conditions are to be carefully watched. Heat and cold, dryness and moisture, are factors that the cheese maker must familiarize himself with in order to succeed. In Prof. Conn's treatise on dairying, cheese has not been overlooked. For the reader's benefit, I have reproduced some of the most helpful points. Duclaux in his first paper in 1877, gave the result of a chemical study of the ripening process of cheese, and these results proved that the ripening was due to the action of micro-organisms. Three years later the same investigator made a study of the bacteria in such cheese and determined that they are very numerous and comprise several species. In general the process of ripening is quite similar to the digestion by the digestive fluids of the stomach and alimentary canal. The ripening of cheese was now studied by others, but the most systematic work was done by Adametz.

That ripening was due to bacteria growth was proved by this observer by treating fresh cheese with a disinfecting agent, which would prevent bacteria growth without affecting the chemical condition of the cheese. Under these conditions the cheese did not ripen. He also made quantitative estimates of the number of organisms present, finding from 25 to 165 millions per ounce, and this number was found to increase slowly during the ripening process. He also tried to determine whether ripening is due to the combined action of many species of organisms, or to a single species. For this purpose he studied many specimens, and studied the cheese at intervals during the ripening. He found many species of bacteria present, but as the ripening went on one species was found to increase at the expense of the others and was much more abundant at the close of the ripening than any of the others. These results have since been confirmed. Says Prof. Conn: At this point the knowledge of the normal, or natural ripening of cheese rests at this time. But few observations have been made in regard to abnormal ripening.

The greatest difficulty that the cheese manufacturer has to contend with lies in this direction. He cannot be sure of a uniform product. In spite of all his precautions his cheese will sometimes undergo abnormal troubles and becomes worthless by changes taking place during the ripening process. Recent experiments have indicated that the direct result is in all cases to be attributed to the action of abnormal species of micro-organisms which get into the milk, and hence have a share in the ripening of the cheese. Black cheese, bitter cheese and cheese flecked with red spots are all thus caused. Other troublesome infections have with certainty been traced to micro-organisms. It is difficult at present to determine how far the ripening is due to different species of organism planted in the curd. It is evident that bacteria is ever present in cheese. The milk from which it is made always contains them, and when made into cheese part of the bacteria at least will be enclosed in the cheese. Here they find proper conditions for growth. Owing to the density of the cheese, the organisms that require air and moisture suffer in consequence.

But in spite of these disadvantages the bacteria grow slowly and soon produce profound chemical changes. They give rise to the peptonizing ferment, which acts upon the caseine, rendering it partly soluble. Besides this, they induce other decomposing changes, the result of which is the production of the rich, delicately flavored cheese of the market.

But though many chemical studies have been made in ripening cheese, we are not in condition at present time to follow the process beyond stating the few salient facts already mentioned. The cheese maker thus forces the bacteria to give him products for which he obtains a high price. Of course, so far as the food value of cheese is concerned, it is the caseine and fat that render the cheese valuable, but its market price depends not upon the quantity of caseine, but upon the flavor, and this flavor is supplied by micro-organisms.

We have as yet only learned that there is a casual connection between the ripening and the micro-organisms; but the condition affecting their growth, the variety of species that can produce a normal ripening of cheese; whether different species of organisms will produce differently flavored cheese; whether the cheese of the markets are due to different organisms used in ripening or chiefly to different conditions under which they are grown; are all problems to be settled before any practical results can be expected. But we can confidently predict one result: If we ever succeed in reducing the ripening of cheese to a systematic process, and become able to use the proper species of organisms to produce it, we may expect an end of the cases of poisonous cheese, of which so many instances are on record.

The poisons in these cheese are due to the growth of mischievous organisms, which Dr. Vaughn designates as tyrotoxicon, these will be avoided when we learn to ripen cheese with pure cultures of the proper species of bacteria. These are the conditions which to-day confront the cheese maker; these are the problems that sooner or later must be solved. More than ever he realizes the importance of brushing aside the antique bric-a-brac that so long has obscured his vision. To produce an article of cheese for the market which will be attractive in style, uniform in make, and of exquisite flavor, is the great desideratum of the cheese makers. That this end may be obtained, "to pace round in the mill of habit," will be an occupation of the past.

When taken into consideration the work of the milkman, or the duties of the butter maker, their responsibilities end where the cheese makers' begin. The late Col. T. D. Curtis in his suggestions to cheese makers gave the following: "The curing room should be well ventilated, but free from drafts of air, and so built as to have a uniformity of temperature. The cheese makers of the United States annually lose large sums for the lack of proper curing rooms. The curing process is both a digestive and a chemical one. It secures a much better cheese to have both changes go on slowly. The rennet breaks down the curd and makes it mellow, while fermentation and oxidation develop the flavors. Cheese are not ready for the market under three months from the time made, unless subjected to the most approved method of curing.

One stubborn fact confronts us to-day, which is this: The cheese business is lacking in variety. As we take our walk among the factories or in the market place, we are impressed with the lack of variety. The American cheese seems to be the uniform style. It is well to have these

“Americas” and to have them of the very best kind. While this style is desirable and acceptable, it is also well to bear in mind the fact that the persistent pursuance of this course will eventually prove ruinous. The time will come when our markets will be congested with unsalable cheese. The overcrowding of our markets with one kind of cheese is detrimental not only to the maker but also to the dealer. We tire if given continually baked potatoes to eat, or if supplied with one kind of bread. The same rule will be applicable, when we consider one kind of cheese. After having become perfected in the manufacture of one style of cheese, let the maker expend a little of his ingenuity on another, to adopt something entirely new, and to manufacture goods of novel description. We export to Europe in large quantities our “American ( cheese.” At the same time we import not an inconsiderable quantity of foreign brands. In this variety we find the Camembert, Brie, Neufchatel, Roquefort, Gruyere and others. These are some of the varieties that when made according to the science and art of cheese making, will please the palate of a large class of people. Not only do they please the consumer, but in return there is a handsome profit for the maker. I wish to further note.

A remarkable impetus which has been given the cheese of our State during the past two or three years. One fact has been clearly demonstrated; that is, the standard of fats fixed by our excellent law is not too high. Forty per cent. of fats to total solids will eventually become the universal standard of cheese throughout the United States. While we find our “*Minnesota Full Cream Cheese*” averaging so well in fats, there are other points that must not go unheeded. Greater care in the manufacture of cheese is necessary. Also should greater care be given the curing and ripening of cheese.

Another serious difficulty confronts the manufacturer. As a rule, he is too hasty in putting his cheese on the markets. Cheese thirty days old is not fit for the market, no matter how great the demand or how good the price. Hold your cheese until it has passed the green incipient stage. It requires time for ripening, and no cheese is marketable until the acids have developed into a rich, nutty flavor. With as much propriety might the distiller expect his raw liquors to command the highest price and to receive general approval. Therefore use the utmost care in the manufacture of your cheese. Have the temperature as near right at all times as possible. Do not expect your cheese to become popular until they have developed qualities that cheese loving people always recognize. You will then have established a reputation, and your cheese will always be in demand.



# RESULTS OF ANALYSES OF MINNESOTA FULL CREAM CHEESE, 1891-1892.

Factory No.	Location of factory.	Water.	Fat.	Caseine, etc.	Solids.	Fat to total solids.
97	Biscay.....	33.10	29.80	37.10	66.90	44.54
97	Biscay.....	31.50	28.40	40.10	68.50	46.44
9	Wasioga.....	30.80	34.60	34.60	69.20	50.00
96	Hampton.....	29.40	34.70	36.90	70.60	49.43
95	Heidleberg.....	31.00	34.30	34.70	69.00	49.70
1	Fergus Falls.....	32.20	35.10	32.70	67.80	51.76
99	West Concord.....	34.14	32.30	30.06	65.86	49.01
94	Spring Hill.....	32.00	33.20	34.80	68.00	48.82
94	Spring Hill.....	26.20	34.70	39.10	70.80	47.01
32	Santiago.....	28.30	34.80	36.90	71.70	48.53
32	Santiago.....	26.30	38.20	36.50	73.70	51.83
32	Santiago.....	26.20	37.80	36.00	73.80	51.22
32	Santiago.....	29.10	36.60	35.30	70.90	51.62
....	Dawson.....	26.50	36.70	36.80	73.50	49.93
....	St. Paul.....	27.40	36.10	36.50	72.60	49.72
....	Muscoda.....	29.95	34.65	35.40	70.05	49.46
95	New Trier.....	31.55	35.75	32.70	68.45	54.91
125	Alma City.....	30.60	34.70	34.70	69.40	50.00
123	Willmar.....	27.70	39.00	33.30	72.30	53.94
85	Sauk Centre.....	29.60	46.50	43.90	90.40	51.66
....	Becker.....	15.80	47.90	35.30	84.20	50.68
32	Santiago.....	19.50	42.60	37.90	80.50	53.25
....	Becker.....	14.60	48.00	35.40	85.40	56.15
32	Santiago.....	21.70	41.20	37.10	78.30	52.62
....	St. Francis.....	17.60	42.60	39.80	82.40	51.70
110	.....	12.84	47.30	39.86	87.16	54.26
26	.....	19.70	47.80	29.50	80.30	59.75
26	.....	22.90	40.60	36.50	77.10	52.66
26	.....	24.90	37.50	37.60	75.10	49.93
119	Raymond.....	36.10	30.80	33.10	63.90	48.20
....	Stillwater.....	22.50	39.90	37.60	77.50	51.50
....	Stillwater.....	22.60	40.20	37.20	77.40	51.94
....	Stillwater.....	20.00	42.40	37.60	80.00	53.00
....	Stillwater.....	24.80	38.20	37.00	75.20	50.78
26	.....	19.10	33.50	47.40	80.90	41.09
....	Janesville.....	32.10	32.30	34.60	67.90	47.57
....	Stanton.....	20.30	41.80	37.60	79.70	52.44
....	Stanton.....	23.10	35.60	41.30	76.90	45.00
....	Stanton.....	28.50	34.00	37.50	71.50	47.54
95	New Trier.....	30.20	34.70	34.70	69.80	49.72
96	Hampton.....	30.30	34.40	35.30	69.70	50.64
....	Stanton.....	33.40	34.60	34.60	66.60	51.94
93	Owatonna.....	33.80	30.30	35.90	66.20	45.77
113	Hastad.....	29.70	35.70	34.60	70.30	50.78
85	Sauk Center.....	29.70	32.10	34.60	70.30	45.85
....	Merton.....	31.60	33.00	35.40	68.40	47.95
26	Medford.....	32.80	32.10	35.10	67.20	47.76
26	Medford.....	32.70	32.20	35.10	67.30	47.99
121	Merton.....	29.40	34.60	36.00	70.60	48.73
....	Blooming Grove.....	28.50	34.10	37.40	71.50	46.15
94	Spring Hill.....	33.60	36.20	30.20	66.40	54.51
125	Alma City.....	32.20	36.00	31.80	67.80	53.09
125	Alma City.....	33.00	33.60	33.40	67.00	50.16
128	Swan Lake.....	29.90	35.90	34.20	70.10	50.10
93	Owatonna.....	28.40	33.80	37.80	71.60	47.20

RESULTS OF ANALYSES OF MINNESOTA FULL CREAM  
CHEESE, 1891-1892.—*Continued.*

Factory No.	Location of factory.	Water.	Fat.	Caseine, etc.	Solids.	Fat to total solids.
26	Medford .....	29.00	31.40	39.60	71.00	44.50
121	Merton .....	29.76	33.34	36.90	70.24	47.46
93	Owatonna .....	30.92	32.24	36.84	69.08	46.65
121	Merton .....	13.80	41.60	54.60	86.20	43.34
121	Merton .....	34.20	32.70	33.10	65.80	49.69
41	Havana .....	26.04	35.16	38.80	73.96	47.54
41	Havana .....	27.96	36.24	35.80	72.04	50.33
121	Merton .....	30.10	33.90	36.00	69.90	48.49
41	Havana .....	30.20	35.40	34.40	69.80	50.71
26	Medford .....	34.54	31.36	34.10	65.46	47.97
109	Austin .....	25.44	33.40	41.16	74.56	44.81
42	Oakland .....	32.30	32.50	35.20	67.70	48.00
18	Rock Dell .....	21.50	38.20	40.30	78.50	48.66
18	Rock Dell .....	24.50	37.10	38.40	75.50	49.13
18	Rock Dell .....	31.10	32.00	37.90	71.00	47.83
18	Rock Dell .....	32.24	30.80	41.96	75.00	43.98
41	Havana .....	29.40	29.60	41.00	70.60	42.28
116	Gaylord .....	34.80	32.90	32.30	65.20	50.46
116	Gaylord .....	30.24	33.20	36.56	69.76	47.60
...	Jackson .....	31.80	34.00	34.20	68.20	49.85
111	West Concord .....	29.60	37.20	33.20	70.40	52.84
125	Alma City .....	26.20	37.70	36.10	73.80	51.08
16	Heidleberg .....	32.80	34.10	33.10	67.20	50.08
96	Hampton .....	32.74	33.40	33.86	67.26	49.64
95	New Trier .....	35.70	31.80	32.50	64.30	49.45
110	Stanton .....	32.20	33.60	34.20	67.80	49.39
110	" .....	32.24	34.00	34.76	67.76	50.17
...	Wanamingo .....	30.00	32.60	37.40	70.00	46.57
93	Owatonna .....	35.50	32.50	32.00	64.50	50.38
93	" .....	32.80	32.40	34.80	67.20	48.21
120	Acoma .....	34.60	32.90	32.50	65.40	50.00
18	Rock Dell .....	33.70	33.40	32.90	66.30	50.39
18	" .....	34.40	33.40	32.20	65.60	50.91
18	" .....	31.44	33.70	34.66	68.56	49.15
18	" .....	31.60	33.70	34.70	68.40	49.27
...	Huntley .....	32.20	30.40	37.40	67.80	44.82
101	Wanamingo .....	33.06	34.20	32.74	66.94	51.40
16	Heidelberg .....	34.70	34.00	31.30	65.30	52.01
34	" .....	40.00	28.90	31.10	60.00	48.16
133	Union Hill .....	31.30	35.70	33.00	68.70	51.98
127	Waterville .....	40.50	29.40	30.10	59.50	49.41
33	" .....	32.30	34.30	33.40	67.70	50.66
33	" .....	27.60	32.40	40.00	72.40	44.75
101	Wanamingo .....	30.66	28.10	41.24	69.34	40.52
109	" .....	32.00	32.70	35.30	68.00	48.09
119	" .....	32.90	32.60	34.50	67.10	48.58
117	Janesville .....	30.70	34.70	34.60	69.30	50.07
127	Waterville .....	34.50	31.60	33.90	65.50	48.24
127	" .....	34.40	31.60	34.00	65.60	48.17
127	" .....	34.16	31.40	34.44	65.84	47.57
121	" .....	28.60	34.30	37.10	71.40	48.03
41	Havana .....	28.40	33.80	37.80	71.60	47.20
93	Owatonna .....	29.70	33.70	36.60	70.30	47.92
93	" .....	30.20	34.70	35.10	69.80	49.71
93	" .....	30.40	35.30	34.30	69.60	50.72

RESULTS OF ANALYSES OF MINNESOTA FULL CREAM  
CHEESE, 1891-1892.—*Continued.*

Factory No.	Location of factory.	Water.	Fat.	Caseine, etc.	Solids.	Fat to total solids.
93	Owatonna.....	29.40	34.40	36.20	70.60	48.72
93	.. ..	29.30	35.60	35.10	70.70	50.33
93	.. ..	31.90	33.20	34.90	68.10	48.75
93	.. ..	24.76	35.10	40.14	75.24	46.93
93	.. ..	30.90	34.00	35.10	69.10	49.20
93	.. ..	31.80	33.00	35.20	68.20	48.53
93	.. ..	33.20	32.20	34.60	66.80	48.34
93	.. ..	31.20	31.80	36.00	68.80	46.22
125	Alma City.....	32.40	33.70	33.90	67.60	49.70
18	Rock Dell.....	26.60	34.40	39.00	73.40	46.49
18	Rock Dell.....	27.40	33.80	38.80	72.60	46.55
3	Byron .....	31.10	32.20	36.70	68.90	47.02
3	Byron .....	32.80	32.80	34.40	67.20	48.81
3	Byron .....	33.20	32.20	34.40	66.80	48.51
16	Heidelberg.....	34.10	30.10	35.80	65.90	45.07
16	Heidelberg.....	31.56	32.04	36.40	68.44	46.81
....	New Prague.....	29.00	34.60	36.40	71.00	48.73
....	New Prague.....	31.70	32.90	35.40	68.30	48.63
26	.....	30.10	33.60	36.30	69.90	48.04
96	Hampton.....	22.20	39.10	38.70	77.80	50.39
96	Hampton.....	21.66	39.04	39.30	78.34	49.84
96	Hampton.....	22.10	40.50	37.40	77.90	52.00
43	.....	17.30	41.60	41.10	82.70	50.30
121	Waterville.....	21.80	39.00	39.20	78.20	50.00
121	Waterville.....	20.90	39.40	39.80	79.10	49.81
121	Waterville.....	20.26	39.74	40.00	79.74	49.92
125	Alma City.....	15.20	43.20	41.60	84.80	50.00
125	Alma City.....	16.20	38.80	45.00	83.80	46.30
125	Alma City.....	23.70	36.70	39.60	76.30	48.09
125	Alma City.....	27.70	36.60	35.70	72.30	50.62
121	Waterville.....	20.26	39.74	40.00	79.74	49.92
121	Waterville.....	22.10	40.50	37.40	77.90	52.00
121	Waterville.....	29.70	34.30	36.00	70.30	48.64
97	Biscay .....	21.40	39.80	38.80	78.60	50.63
97	Biscay .....	28.60	36.20	35.20	71.40	50.70
21	Lansing .....	23.20	38.20	38.60	76.80	48.42
109	Austin .....	21.10	40.20	38.70	78.90	50.93
93	Owatonna.....	25.70	40.00	34.30	74.30	50.83
95	.....	28.60	36.80	34.60	71.40	51.34
95	.....	27.90	37.90	34.20	72.10	52.56
95	.....	27.10	38.20	34.70	72.90	52.40
61	.....	27.80	37.60	34.60	72.20	52.07
61	.....	20.60	43.40	36.00	79.40	54.66
1	Fergus Falls.....	24.90	40.30	34.80	75.10	53.26
1	Fergus Falls.....	24.70	40.40	34.90	75.30	53.65
1	Fergus Falls.....	23.10	42.00	34.90	76.90	54.47
1	Fergus Falls.....	26.90	37.20	36.90	73.10	50.88
1	Fergus Falls.....	29.80	36.60	33.60	70.20	52.28
1	Fergus Falls.....	24.20	39.00	36.80	75.80	51.44
1	Fergus Falls.....	27.20	38.40	34.40	72.80	52.74
1	Fergus Falls.....	27.20	39.20	34.60	72.80	53.29
1	Fergus Falls.....	22.20	35.70	42.10	77.80	45.88
1	Fergus Falls.....	28.90	37.60	33.50	71.10	52.88
125	Alma City.....	27.20	41.70	31.20	72.80	57.01
93	Owatonna.....	32.00	35.50	28.80	67.30	49.78



RESULTS OF ANALYSES OF MINNESOTA FULL CREAM  
CHEESE, 1891-1892.—*Continued.*

Factory No.	Location of factory.	Water.	Fat.	Casine, etc.	Solids.	Fat to total solids.
29	Western.....	31.80	35.60	32.60	68.20	52.19
120	.....	33.20	35.00	31.80	69.80	52.39
120	.....	28.00	37.30	34.70	72.00	51.80
120	.....	29.80	36.60	33.60	70.20	52.28
72	Stephen.....	37.46	31.50	31.04	62.54	50.37
72	Stephen.....	32.60	33.60	33.80	67.40	49.85
72	Stephen.....	33.80	33.00	33.20	66.20	49.84
1	Fergus Falls.....	28.30	38.80	33.90	71.70	54.11
47	Frazee City.....	34.50	34.60	30.90	65.50	52.82
47	Frazee City.....	24.40	40.50	35.10	75.60	53.57
47	Frazee City.....	26.10	35.30	38.60	73.90	47.76
47	Frazee City.....	31.90	31.60	36.50	68.10	46.24
109	Austin.....	29.70	36.60	33.70	70.30	52.28
33	New Richland.....	27.60	38.00	34.40	72.40	52.48
33	New Richland.....	30.10	35.50	34.40	69.90	50.79
33	New Richland.....	29.00	35.60	35.40	71.00	50.13
6	Alden.....	27.40	34.70	37.90	72.60	49.79
107	Mapleton.....	35.80	27.40	36.80	64.20	42.67
107	Mapleton.....	30.40	35.20	34.40	69.60	50.59
107	Mapleton.....	33.20	32.20	34.60	66.80	48.20
26	Medford.....	31.80	32.60	35.60	68.20	47.80
....	Lambert.....	31.20	35.80	33.00	68.80	52.03
1	Fergus Falls.....	32.50	35.40	32.10	67.50	52.44
1	Fergus Falls.....	33.40	34.60	32.00	66.60	51.95
95	New Trier.....	32.98	35.60	31.41	66.02	53.92
128	Swan Lake.....	9.50	40.10	50.40	90.50	44.55
128	Swan Lake.....	20.00	41.20	38.80	80.00	51.50
128	Swan Lake.....	19.80	41.00	39.20	80.20	51.25
109	.....	27.20	35.10	37.70	72.80	48.21
123	Willmar.....	27.20	36.60	36.20	72.80	50.27
123	Willmar.....	25.70	35.50	38.80	74.30	47.76
....	Atwater.....	21.70	43.60	34.70	78.30	55.68
....	Atwater.....	25.60	38.10	36.30	74.40	51.21
....	Atwater.....	20.40	43.60	36.00	79.60	57.36
129	Howard Lake.....	27.30	36.10	36.60	72.70	48.83
129	Howard Lake.....	27.00	35.60	37.40	73.00	48.76
26	Medford.....	28.60	36.00	35.40	71.40	50.42
26	Medford.....	32.00	35.00	33.00	68.00	51.48
26	Medford.....	30.60	36.10	33.30	69.40	52.02
26	Medford.....	32.60	35.00	33.40	67.40	51.92
151	Fulda.....	29.40	36.70	33.80	70.60	51.42
120	Western.....	27.60	39.60	32.80	72.40	54.69
141	Cedar Mills.....	24.40	39.20	36.40	75.60	51.85
95	New Trier.....	35.80	33.40	30.80	64.20	52.02
26	Medford.....	30.60	35.40	34.00	69.40	51.00
26	Medford.....	36.00	33.00	31.00	64.00	51.56
102	Wilder.....	20.10	42.50	36.40	79.90	53.31
102	Wilder.....	34.60	33.60	31.80	65.40	51.37
....	St. Paul.....	33.40	31.70	33.90	66.60	47.59
93	Owatonna.....	20.70	40.50	38.80	79.30	52.33
93	Owatonna.....	25.80	37.60	36.60	74.20	50.67
93	Owatonna.....	32.30	34.60	33.20	67.80	51.03
26	.....	34.30	34.00	31.70	65.70	51.75
16	Heidelberg.....	35.10	32.30	32.60	64.90	49.75
16	Heidelberg.....	24.00	34.90	41.10	76.00	45.92

RESULTS OF ANALYSES OF MINNESOTA FULL CREAM  
CHEESE, 1891-1892.—*Continued.*

Factory No.	Location of factory.	Water.	Fat.	Caseine, etc.	Solids.	Fat to total solids.
110	Stanton.....	24.10	42.20	32.70	75.90	55.59
110	Stanton.....	27.00	37.90	35.10	73.00	51.91
96	Hampton.....	29.80	37.00	33.20	70.20	52.85
95	New Trier.....	31.70	37.30	31.00	68.30	54.59
26	Medford.....	29.10	35.50	34.40	69.90	50.79
26	Medford.....	32.60	35.60	31.80	67.40	52.82
26	Medford.....	29.70	37.50	32.80	70.30	53.34
....	Acoma.....	28.80	39.20	32.00	71.20	55.05
141	Cedar Mills.....	29.90	34.70	35.40	70.10	49.57
....	Canton.....	26.40	35.40	38.20	73.60	48.04
....	Canton.....	29.60	33.20	37.10	70.40	47.15
97	Biscay.....	26.90	37.00	36.10	73.10	50.65
97	Biscay.....	30.80	33.00	36.20	69.20	47.69
118	Sumpter.....	26.60	33.60	39.80	73.40	45.77
137	Minneota.....	36.70	29.90	33.40	63.30	47.23
126	Madelia.....	21.50	39.10	39.40	78.50	49.81
126	Madelia.....	29.70	35.10	35.20	70.30	50.00
139	Ætna.....	27.00	34.60	38.40	73.00	47.39
154	Spring Valley.....	33.20	33.80	33.00	66.80	50.59
16	Rock Dell.....	19.60	41.20	39.20	80.40	51.24
....	Total average.....	28.57	35.03	35.37	72.41	49.48

CREAM.

Cream is composed principally of the fatty globules of milk. It also contains variable proportions of watery fluids, milk, sugar, caseine and ash. A decade or more ago it was claimed that an adherent pellicle, sac or envelope enclosed the fatty globules.

This film or envelope containing the fat has received considerable attention, and much investigation by chemists interested in this subject, has been the result. Henle claims that it is an albuminous substance. To his theory there appears a good deal of opposition. Dr. Cameron has satisfied himself that it is a caseine film, and to all these theories Dr. S. M. Babcock, of the Wisconsin Experiment Station, is greatly opposed. Dr. Babcock has satisfied himself that there is no sac surrounding the fat globules. In lieu of this, however, he has discovered what he terms fibrin in milk. By this fibrin the pathological condition of the milk is determined. It is the opinion of many dairy chemists that Dr. Babcock's position is tenable.

Cream must necessarily greatly vary in quality. This is owing largely to the manner by which it is produced, skimming, etc. The composition of cream as here given, is taken from Dr. Letheby's table:

Nitrogenous matter.....	2.70
Fatty matter.....	26.70
Lactine.....	2.80
Saline matter.....	1.80
Water.....	66.00
	100.00

Wanklyn and Bell found the amount of fat in cream to vary from 14.10 to 43.90 per cent.

Some of the large hotels in different cities throughout the country have what is called commercial cream.

It is divided into three classes, viz:

Single cream, double cream and whipped cream. The latter is often called butter cream. The single cream is that which is skimmed from milk at 12 hours setting; double cream at 24 hours, and whipped cream at 36 hours, respectively. By those dealing in commercial cream it has been stated that according to the length of time in which milk was creaming there would be a difference of 20 to 60 per cent of fat. Experience has taught most chemists and dairymen, that the creaming qualities of milk depend more on the breed of the cow, the period of lactation, and the temperature at which the milk is kept. These factors are all significant; time is considered more of an accident. An eastern correspondent discusses the subject intelligently in one of our leading daily papers:

Selling cream is becoming every day a more important branch of the dairy farm, and when properly handled, both in the cans and in the market, this is by far the most pleasant and profitable way to make money with the dairy. First it is necessary to know what it costs to produce cream of a certain richness, and this means that there are creams and creams. The cold method of setting milk produces the greatest bulk and least richness, while shallow pans, at high temperature, give the richest and least bulk and also the shortest lived. The separator will produce it to order, thick or thin. The market has to be catered to, private families demanding the thickest cream and are willing to pay for it accordingly. The hotels and confectioners will take cream of average richness and want it at wholesale prices. There is a great deal of skill in knowing how to handle cream to make it show up fine and remain sweet for the greatest length of time.

Whatever the differences of opinion of leading chemists may be, cream is essentially a luxury. It so varies from milk that the consumption of it is greatly limited. There is, however, one advantage to the purchaser. He can the more readily form an opinion as to the quality of cream. Whereas in milk sophistication cannot be so well detected without resorting to some method of analysis. That the same quality of cream may be produced at all times these conditions would be necessary:

The same kind of cows kept in the herd. A efficient cream separator, or refrigerating rooms, which could be kept at a uniform temperature throughout the year. In the winter season milk gives up its cream without the latter suffering deterioration. During the summer months unless circumstances are most favorable, such as the dairyman being well supplied with ice, or a well of good cold water, the cream will soon become sour. Without these most favorable conditions it would be considered a great burden to insist on a standard for cream, unless a very low limit had been established.

Our state dairy laws as enacted by the state legislature of 1885 did not include cream. As the department advanced in its work the need of a standard for cream became more apparent. What that standard should be was a problem not so readily solved. It is a well known fact that cream is quite as susceptible of adulteration as milk. The various grades are designated as coffee cream, cream for whipping and cream for ices. For most purposes for which cream is used it is largely diluted with milk. The attention of the commission being called to this fact caused the



establishing of a standard for cream. Not until the meeting of the legislature of 1887 was a standard fixed. Chapter 140, section 11, of the general laws specifies the standard of cream as 35 per cent of fat, and provides a penalty for its violation. The standard being somewhat arbitrary did not seem to meet with approval save only by a few consumers. The producers and vendors of cream were in opposition to a standard so high. For their non-approval among the reasons given were these:

As a rule the gravity system for producing was used. This process being slower than others the cream before having entirely separated from the milk would become sour. In the second place the cream would become dry and hardened, thus unfitting it for whipping. Again, to use in coffee it was altogether too thick, and in no way could cream of so high standard be served satisfactorily to the consumer.

Having thoroughly tried the standard of 35 per cent. of fat for four years, a change seemed necessary. Therefore, during the session of the legislature of 1891 the standard was reduced from 35 per cent. to 20 per cent. of fat. A standard so low that all cream producers and vendors might easily comply with the law. Although this very moderate standard has been established there does not appear to be general willingness on the part of either producer or vendor to comply with the law's requirements. Within the past few months eighteen samples have been brought to the laboratory by the inspectors. The analyses showed eleven of that number of required standard, seven proved to be below 20 per cent. and were declared illegal.

#### LARD.

No article is more generally used in the culinary department than lard. In former years everything labeled lard or called by that name was taken and no questions asked. The great packing and rendering houses which have been established within the last few years and their methods of rendering have necessitated a classification. Lard is now classified as kettle and steam.

The material used at the present time requires a further classification. Hence, we have what is designated as "neutral lard," "choice lard," "prime steam lard," and "butchers lard." Leaf lard was the only kind of lard which for years was recognized by the Chicago board of trade.

The lard made by the butchers is small, and they usually brand it "kettle rendered." Farmers who put up what is recognized as domestic lard adopt the same method.

In the report of the United States department of agriculture, division of chemistry, bulletin No. 13, will be found this description of lard: Everything inside of a hog except the lungs and heart, or, in other words the abdominal viscera complete is used. The heart is thrown to one side and the fatty portion trimmed off for lard.....The viscera undergoes the process of washing, which is usually conducted in three or four different tanks.....After receiving a rough wash they are passed from tank to tank, when, after the third or fourth wash, they are ready for the rendering tank. The omentum fat is cut from the kidneys and the kidney with a little adhering fat go into the rendering tank. Spleen and pancreas go into the rendering tanks, as do also the trachea, vocal cords and the œsophagus. To sum up it is safe to say that everything goes into the rendering tank with the following exceptions:

1st. The intestines proper, which are saved for sausage casings.

2d. The liver and lungs.

3d. That part of the heart free from fat.

It is a commercial fact that sausage casings are worth more than the small amount of adhering fat, and consequently will save them. Small hogs produce small casings difficult to pull, and it is reasonable to believe that they will be handled in the simpler manner. They break so easily that they are hardly worth saving separately. It is stated by lard manufacturers that the grease made from the parts of the intestines mentioned above is used for the manufacture of lard oil and soap and does not enter into the lard of commerce.

In fifty-six towns visited in our State by the inspectors 317 samples of lard were taken. Of the entire number of samples thus secured only ten proved to be other than pure lard. The majority of these ten were labeled "compound." We have every reason, therefore, to believe that our markets are in a comparative healthy state so far as the item of lard is concerned. Four years ago our markets were flooded with bogus lard and all kinds of compounds. Thus the law, with its proper enforcement, has not failed of some beneficent results.

#### BAKING POWDERS.

A glance at our tables will show a less number of samples of baking powders examined than formerly. A different course from that heretofore pursued has been taken. In special reports, issued by the department from time to time, the various kinds of baking powders, the manufacturer's name and the brand have all been published. This has necessitated a large amount of work, besides time and expense, given by the department. It is the opinion, however, of the commission that these efforts have borne fruit. While the market is not free from illegal and imitation goods, the per cent. of the spurious article has greatly decreased. In publishing the name of the manufacturers and their deceptive brands of powder, some have withdrawn entirely from the markets of the State, while others have been compelled not only to change their formulas, but also to change their brands. The manufacturers of pure cream of tartar baking powders and pure acid phosphate powders, cause no trouble or inconvenience. There is a class who desire to make their customers believe that they are putting up a genuine phosphate powder when such is not the case. The "blind" or "catch" label serves its purpose in these instances. Many an honest retail dealer is thus hoodwinked and deceived by unscrupulous manufacturers. In turn the consumer takes it for granted that he is buying pure baking powder, whereas he is not only cheated in the quality of the article, but is also defrauded out of his money. At the present time it is the exception and not the rule where alum baking powders are found in our markets not branded.

Many new schemes, and some exceedingly clever ones, have been introduced by manufacturers of illegal powders for the advertising of their goods. This is one of the evils which many communities will have to endure, until such a time when they will have received more light and are better posted as to the merits of different baking powders.

This leads us up to the question: What is a healthful, efficient and satisfactory baking powder?

In a recent paper read by Dr. Otto Hehner, president of the English Society of Public Analysts, he sets forth most clearly the "influence of alumed baking powder on peptonic digestion."

Dr. Hehner's experiments cover a wide field, and the results of his investigations prove conclusively the harmfulness and indigestibility of bread in which alum powder as a leavening agent has been introduced.

Seven experiments were made by the doctor on egg albumen. The usual proportion of baking powder that would be necessary for a four-pound loaf of bread was used. The pepsin solution employed as the agent for digestion contained 0.02 gramme of pepsin in 100 C.C. of water.

With wheat flour four experiments were made, using corresponding quantities of alum with the amount of flour for each experiment.

A similar course was pursued with bread. The influence of baking powder containing alum was more marked in the case of bread, than in raw flour. The digestion of the bread was less perfect.

Following these, eight experiments were made on milk. With reference to the latter, Dr. Hehner says: "It is remarkable that in the digestion of milk the alumed baking powder exerts a more injurious influence, than does the amount of alum contained in it, and the smaller amount of alum, whether taken as baking powder or as a crystallized alum, acts as markedly as does the four times larger quantity."

Three experiments were made, in order to ascertain whether baking powder free from alum had any retarding influence upon digestion.

The first was a blank digestion of hard boiled eggs; in the second, 0.05 gramme of alum-free baking powder was introduced, and the third, 0.2 gramme of the same powder was used. In all three cases the whole of the white of egg dissolved in five hours, nothing insoluble being left. "It is evident," says Dr. Hehner, "that in the digestion of egg at least, alum-free baking powder is without detrimental influence."

The author of the article was further convinced of the tenability of the ground he had taken, by physiological experiments.

He weighed out four separate lots of alumed baking powder, amounting in all to two grammes or thirty grains. This is very nearly the quantity which would be used in the making of four ounces of bread. That is in case the bread was made according to the directions on the label of the baking powder can. The powder was mixed with water, time being given for the effervescence to finish, when sugar was added to render the dose palatable. The doctor took one dose and gave the other three to as many of his assistants. He states that they were all in perfect health before taking the dose. The doctor says: "In about an hour-and-a-half afterwards unpleasant symptoms began to appear. Speaking for myself, I experienced first a feeling of great weight in the region of the stomach, later on pains in the epigastric region, slight difficulty in breathing, headache, and ultimately slight diarrhea symptoms, resembling an attack of indigestion. My assistants were similarly affected, and felt discomfort for several days."

From these very careful and searching experiments Dr. Hehner arrived at the following conclusion: "That alum baking powder exerts a most injurious influence upon digestion, whether artificial or within the body; that the presence of alum in baking powder must be regarded as an adulteration which is injurious to health; that samples containing alum should be condemned as injurious, even though magistrates and recorders



declare alum to be quite harmless, and that the sodium bicarbonate contained in the baking powder does not neutralize the objectionable qualities of the alum."

There were other members of the society present who "thought that the strong evidence as to the deleterious action of alumina on the human economy which had been brought before them, could not fail to convince any unbiased mind that the presence of alum in baking powder was highly undesirable."

The question while not a new one, may, nevertheless, be capable of some new as well as modified answers. In the biennial report published by this department two years ago, the baking powder subject received considerable attention, and was quite thoroughly discussed. In the report referred to the various baking powders were taken up in their order, and the merits, or otherwise, as the case may have been, of these powders treated in detail. The conclusions arrived at are these: The investigation and analysis of the purest cream of tartar reveals from 4 to 5 per cent. of tartrate and sulphate of lime, 94 per cent. of bi-tartrate of potash is considered an average standard for genuine cream of tartar. There should be an allowance of 20 per cent. as the maximum of starch to the mixture of cream of tartar and bi-carbonate of soda. This percentage of starch is deemed essential owing to the fact that without some such admixture of a neutralizing character, a gradual deterioration of the baking powder results from this and from long keeping. This deterioration being due to the slow interaction of the constituents as they become affected by atmospheric moisture. If this formula is adhered to then is the ideal powder possible, whose composition is as follows:

Starch .....	20.0 per cent.
Soda bi-carbonate .....	23.7 per cent.
Cream of tartar (94 per cent. pure) .....	56.3 per cent.

---

100.0

The available gas-producing power of such a powder is 12.38 per cent.

The various agents introduced in baking powder, since that time have received more or less attention. Noticeably among the number has been that of ammonia. The subject of ammonia in baking powders has been discussed by some with a good deal of energy. What others may have lacked in energy and ability, they have displayed in zeal. As the question now stands, the manufacturers who have so vigorously opposed the use of ammonia can at present feel that the weight of the argument is in their favor.

The question was ably discussed at a meeting of the American Chemical Society held in Washington in August, 1891. Dr. Endemann read a paper before the society which treated physiologically and chemically of the relation that ammonia sustains to baking powders. Dr. Endemann's investigations put to rout the theories entertained by some regarding the volatility of ammonium carbonate. Not only was ammonia used on account of its cheapness as a leavening agent, but of its further office of rendering dough porous. The facts adduced showed the latter to be fallacious. He found the porosity of the dough to be greatly diminished by a re-action of the ammonia with the gluten of the flour, thus resulting in the formation of a new volatile compound. The publication of Dr.

Endemann's paper was not only suppressed for the time, but afterwards garbled and misquoted to such an extent that it became necessary for the doctor to vigorously protest.

In order to check false impressions which were going out, he was compelled to address a letter to the New York Tribune in which he said: "I have just seen the report of the discussion at the Washington meeting of the American Chemical Society, August 18, relative to the use of carbonate of ammonia in baking powders. This report is incomplete and incorrect in many particulars, and as the paper which precipitated the discussion was read by me and was based upon my own experience, I desire to make certain corrections in the interest of the truth and for the benefit of the large number of your readers to whom the question is one of great moment. The paper, as read before the society, related that ammonia in baking powder is retained in the bread by reason of its affinity to the gluten. The consensus of opinion as expressed during the discussion was against the use of carbonate of ammonia in baking powder with the only exception of Dr. McMurtrie, who is now an employee of a baking powder company which uses carbonate of ammonia in its baking powder. Of the other parties mentioned as having taken part in the discussion were Professor Dr. Baker, of the University of Pennsylvania, who is the president of the society and one of our highest authorities. In answer to a pleading by Professor McMurtrie that only small quantities of ammonia were used in baking powders, he stated: 'No matter how small the quantity, I must decline to be dosed medically without my consent when taking my meals.' Dr. E. H. Bartley, formerly chemist of the Brooklyn board of health, and professor of chemistry at the Long Island College, likewise named, did not, I believe, take active part in the discussion, but is already on record as strongly opposed to the use of ammonium carbonate in baking powders. Dr. Richardson volunteered only the question whether the flour used in the experiments was of good quality, of which I assured him by stating that it was the best, and the flour used in my family. Professor Mallet was not present. Your article is misleading in so far as it gives the impression that ammonia disappears on baking. My actual tests agree with those made by others, showing that ammonia remains in the bread. My investigations simply assign a new cause for its retention."

The conditions as noted regarding the various powders naturally bring us to face the possibilities which lie in ammonia. Is it a disease producing agent? There should be but one object in view, that is to arrive at the true status of the case. In order to accomplish this, it seems but just and proper to make careful chemical and physiological experiments of all substances entering into the composition of baking powders.

#### VINEGAR.

A most thorough inspection of all the most important towns in the State has brought about these results:

White vinegar as now offered for sale in the market is of legal strength. More cider vinegar than ever before is now being sold in our markets. The quality of this article is greatly improved since the vinegar law went into effect. Instances are rare where we find artificially colored low wine vinegars, now being sold as cider. We have but one exception, and those are the "Alden" goods. Alden & Co. seem to take special pride in the manufacture of illegal and imitation vinegar. They have a peculiar way of visiting the smaller towns, the by-ways and places where they can feel sure that their deceptive practices of defrauding and deceiving will not be detected.

By applying these methods, and by misrepresentation, they manage to palm off on the unsuspecting dealer, a considerable quantity of illegal vinegar. It may also be of advantage to many dealers to be informed regarding malt vinegar.

True malt vinegar is an article which is valuable, and is also highly appreciated by those who are familiar with its many excellent qualities. There is, however, a questionable article sold in our State which is branded "malt" vinegar. These goods fall so far below in quality, that the dealer and consumer ought no longer to be deceived as to their real character. For the purpose of enlightening many who may desire information on this subject, I will here give an outline of malt vinegar as made in England. Spon in his Industrial Arts says:

"The malted or unmalted grain are first crushed, (not ground as it is often erroneously described), between steel rollers, which revolving against each other, are so fixed that the grain shall be broken only. There are several reasons for preventing its being ground into meal:

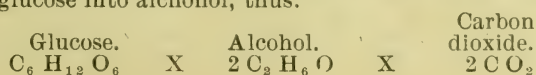
"The first of which is, that the great quantities of the husk would find their way into the mash tun, and would have the effect only of supplying an undesirable amount of unnecessary vegetable matter.

The second is, phosphate combinations are most injurious; and it is in the husks that the phosphates abound. The third objection is a mechanical one. The bottom of the wash-tun, through which all the wort has to be drawn away, would, on opening the taps, be immediately stopped up.

It must be observed at this point that the unmalted grain—(barley, maize, oats or whatever is chosen) must be thoroughly dried in a proper kiln previous to crushing, in order that many of the glutinous and albuminous matters may be destroyed. Unless this precaution is adopted, there is little chance of the vinegar being sufficiently sound to stand the deteriorating effect of the atmosphere for any length of time after its manufacture.

From a receiver the grain is passed into a mash-tun, together with water heated at a temperature of 170 F. This mash-tun is supplied with revolving forks, which, while revolving, move round and round the tun and are kept in motion about an hour. At the end of this time the whole will have become thoroughly incorporated, and the temperature uniform. The forks are then stopped, and the mash is allowed to rest about three hours, after which the taps are set to draw off the wort. This is immediately conveyed to the boilers, and again well boiled for the purpose of coagulating the albumen.

The components of the malt are vegetable gelatine, diastase, etc., produced from the gluten of barley during generation, and large quantities of starch, which, in the mash tun, is converted by the diastase, first into dextrine and at a further stage into artificial glucose. It may be explained now why unmalted grain is used together with malt. Malt possesses much more diastase than is necessary for the conversion of all the starch which it contains, and consequently requires more of the body to be supplied from a raw grain, in order to exhaust itself. The fact has been verified by practical vinegar brewers that good sound vinegar cannot be obtained from malt alone. The reason is undoubtedly that the superfluity of diastase remaining in the liquor produces secondary and putrefactive fermentation in the acetifer, which cannot with any certainty be prevented. . . . . The mass being converted into artificial glucose, it is passed through a refrigerator into the fermenting tun, and yeast is added. The operation of yeast being, of course, to produce fermentation. It is at this point that the process of vinegar-making deviates from that of beer-brewing. In the latter it is not desired to convert the whole of the glucose into alcohol, but only to the extent of about half, so that the beer may contain some sugar as well as alcohol. In vinegar making alcohol is the only practical element required. The fermentation is therefore forced on to the utmost by large and frequent additions of yeast until all the sugar has disappeared, and an alcoholic solution remains. At this point the chemical change may be described as the conversion of glucose into alcohol, thus:





The fermentation now being forced to its utmost point, the wort is conveyed by pumps to other finishing vats, where it is stored for some days to allow it to clear itself, by subsidence of all dead yeast and cloudiness as completely as possible, and then passing through a filter bed of wood chips and shavings into the acetifer.....

The temperature of the acetifiers, or generators varies but little, say 100-110 degrees Far. In the early part of the process, the higher temperature is applied, but as the acetification proceeds to its completion, it is gradually reduced to the lower. About six weeks' working is necessary for the complete acetification of each lot.

The peculiar volatile and agreeably aromatic odor and flavor of brewed vinegars, which are not to be met with in those made simply of acetic acid and coloring matter, are due to the presence of acetic ether, and volatile substances of a similar character, derived only from the grains used.

The entire process of making malt vinegar occupies a period of about two months. At the end of which time the vinegar is passed away into other vats for the purpose of cleansing, coloring, etc.

The cleansing (rape) vats are supplied with beds of about 4 to 5 feet deep, the bottom being a layer of straw, the middle sand, and the upper shingle. Many vinegar brewers are also wine makers, and their rapes are then freely supplied with spent raisins, etc., the refuse of their wine manufacture. These raisins, rape, etc., enrich the flavor of the vinegar."

The quick "German process" of vinegar-making differs only from that already described in the fact that alcohol and water are used in the place of brewed material, alcohol on the continent being entirely free from excise duty. Alcohol and water with some of the raw brewed wort to convey the volatile and agreeably aromatic odor obtained from the grain, are often used. In making vinegar from an alcoholic solution it should not be much more than 15 per cent. in strength. It should be kept, say, at a temperature of 90 to 100 degrees Far. Good water is requisite in every instance for good vinegars.

The operation watched daily and carefully should be carried on until the specific gravity remains constant. That is easily ascertained by the use of the acetometer. The specific gravity of alcohol is much less than that of water, that of acetic acid, on the contrary is greater, therefore it may be readily ascertained when the whole of the alcohol is converted. Too little treatment would result in much alcohol being lost, or rather unutilized, through its non-conversion, and the consequent deficiency of acetic acid. While on the other hand, if the treatment is continued after full conversion, a large amount of the acetic acid being volatile, would evaporate and be lost.

Of the several varieties of vinegar, the white wine is the most highly esteemed. The price of the article precludes its general use. Many are led to believe that they are buying the product of the vintage when in reality they are buying vinegar made from the low wines or low whiskey. This is an alcohol separated by distillation, and this product into acetic acid by passing through generators. The naming of wine vinegar "white wine vinegar," has deceived many. Next to the real white wine may be classed the malt vinegar. Instead of containing from 6 to 12 per cent. of absolute acetic acid, it has from 4 to 6, and yields extractive matter from 5 to 6 per cent. containing a large proportion of phosphates.

The fact that there is such a large amount of cider vinegar manufactured and used throughout the United States is due to the unusual quantity of apples grown. The care necessarily bestowed in the manufacture of cider vinegar, the time required for acetification, clarifying, etc., results in a high price being put on good apple vinegar. For these rea-

sons spurious and inferior vinegars have been put on the market. As an illustration: A low wine vinegar colored with caramel or a little extract of barley malt, will sell at wholesale for 6 or 7 cents per gallon.

A genuine cider vinegar cannot be sold at wholesale for less than 18 or 20 cents per gallon. The low wine vinegar is made to imitate the cider vinegar; is sold at the same price as the genuine cider vinegar, and thereby the innocent purchaser is defrauded.

The dairy and food commissioner has succeeded in checking this evil.

Our law requiring vinegar to contain 4.5 per cent. of acetic acid, and in case of cider vinegar not less than 2 per cent. of solids, has been most beneficial in effect.

#### MISCELLANEOUS.

Our laws do not include all classes of foods. Drugs are entirely omitted, yet the commission deemed it wise to investigate along some unprotected and special lines. For the purpose of enlightening the masses as to the real condition of coffee, sugars, molasses, spices, etc., samples of the articles were secured in the open market and submitted to analysis. The tables and results of this work, so far as practical are herewith given.

#### COFFEE.

The ripe coffee bean is described as being about the size and shape of a small cherry, and of a dark scarlet color.

In each berry there are two beans placed face to face and enclosed in a hard coriaceous membrane, surrounded when fresh, by a fleshy shell or pericarp, which when dry becomes hard and brittle. The berries, after being dried by the rays of the sun, are passed between rollers to remove the dried pulpy matter, and the coriaceous membrane. They are then assorted according to size preparatory to roasting. The tissues which enclose the bean are generally distinguished as the husk, the parchment and the skin.

The principal organic substances composing raw coffee beans are coffeine, fat, caffeic acid, gum, saccharine matter, legumin and cellulose. The same substances are also found in the roasted beans, though modified in some degree by the roasting process.

#### ADULTERATION OF COFFEE.

The substances most generally employed for mixing with or the adulteration of coffee, are the following:

1st—Roots, such as chicory, dandelion, mangold wurtzel, turnips, parsnips, carrots, etc.

2d—Seeds, such as beans, peas, date stones, malt, rye, etc.

3d—Burnt sugar, cracker dust, beans and figs. Burnt sugar, or caramel is sometimes added to coffee to give color to the extract. It is more frequently used, however, to improve and subserve the aroma of the roasted berry.

The vegetable substance is in all cases roasted and ground to the consistency of coffee. There are instances where the article is first used to add to or adulterate chicory, and in such form it is mixed with coffee. There is another form of adulteration in coffee which more recently made its appearance in the shape of the natural bean. In reality it is nothing more than baked dough with a small per cent. of pulverized coffee added.

This mass is then moulded so as to very cleverly imitate the natural coffee bean. I have examined 10 samples of ground coffee, nine of which proved to be adulterated.

#### SUGAR.

The sugars which appear in commerce are easily divided into two classes viz: That corresponding to sugar from sugar cane, and the other corresponding to glucose.

Sucrose, or cane sugar, has its origin in certain grasses, to which the generic term saccharum is applied. Sucrose is also derived from sugar cane, familiarly known as sorghum.

Sucrose is also found in the common beet, in the sap of maple sugar, in the wild date palm, and in the green stalks of Indian corn. Sugar from these sources is used almost exclusively for domestic purposes. It is crystalline, soluble in one third of its weight of cold water, and when pure has a specific gravity of 1,593 at 39 degrees F. (4° C.)

The principal sugars corresponding to glucose are—Dextro-glucose, produced by the hydration of starch under the influence of dilute acids. Glucose exists ready formed, sometimes, with cane sugar, and sometimes with levulose in fruits.

Maltose is produced by the action of malt extract on starch. Levulose formed from cane sugar, along with dextro-glucose, by the action of dilute mineral acids. These two kinds existing in equal proportions in what is known as invert sugar.

Ten samples of sugar were bought in the open market. They were all examined with a Schmidt and Haensch polariscope with results as follows: Nine of the samples, or ninety per cent., were adulterated with glucose. One sample proved to be the product of genuine cane sugar.

#### SUGARS FOUND IN THE ST. PAUL MARKET.

Inspection. number.	ARTICLE.	Sucrose or Cane Sugar.	Glucose.	Water.
108	X. C. sugar.....	54.50	40.12	5.38
109	X. C. sugar.....	48.37	45.42	6.21
110	Brown sugar.....	31 35	62.14	6.51
210	Cut loaf sugar.....	58.91	35.28	5.81
211	"A" sugar.....	50.22	42 94	6.84
213	X. C. sugar.....	69.47	24 82	5.71
154	X. C. sugar.....	69.96	25.28	4.76
191	X. C. Sugar.....	54.06	40.21	5.73
202	C. sugar.....	47.96	45.80	6.24
203	Cut loaf sugar.....	98.00	.....	2.00

#### SYRUPS.

Table syrup and molasses are articles of food with which all are familiar. It matters not how well known these articles are, a word of explanation may not be amiss.

Molasses is a solution of sugar, containing invert sugar, gummy matters, caramel, etc. These form the mother liquor remaining after the crystallization of raw cane sugar. The name syrup is commonly applied to the residual liquor obtained in the manufacture of refined sugar. In



commerce the term grape sugar is applied to the solid product, and the syrup and liquid form is known as glucose. The principal use of starch sugar and glucose are in the manufacture of table syrups; they are also used as substitutes for malt in the brewing of ale and beer.

Other important applications are also made of the glucose product.

It is used as a substitute for cane sugar in confectionery, in the preparation of jellies, as an admixture to genuine honey, as an adulterant of cane sugar, and it is also employed for the preparation of vinegar.

The manufacture of glucose is substantially as here given:

The flour part is obtained by the corn first being soaked in water to soften the hull, thus it is made ready for the cracking process. By a peculiar mechanical process both the hulls and germs are removed and the flour part now suspended in solution, contains only the gluten and starch. The gluten of corn is of a rich golden color, and the starch snow white. To change the starch into glucose a chemical apparatus is devised, and the glucose necessarily passes through four or five stages.

By the use of dilute sulphuric acid the first change results in the production of what is known to chemists as dext rine. If it is desired to stop at this point, the acids are neutralized with lime water, and dextrine is the permanent product. If, however, another step is desired, the process goes on, and maltose is the result. The chemical change in the third stage results in the production of glucose; and at this point the greatest chemical skill must be brought into requisition. The product, glucose, must respond to the following formula: Six parts of carbon, twelve parts of hydrogen and six parts of oxygen. If this formula be compared with starch, which is six parts of carbon, ten of hydrogen and five of oxygen, it will be observed that the sulphuric acid has not been added to the starch, but has taken up two parts of the hydrogen, and the only gain in the starch is one of oxygen. Lime water, which is introduced to neutralize the acid, forms a product called gypsum. The fourth stage results in crystalizing the liquid and the product is called grape sugar. A fifth stage could produce caramel or burnt sugar were it of any commercial value.

The sulphate of lime is found by the neutralizing lime water and sulphuric acid. By gravitation this is carried to the bottom of the vessel and the supernatant saccharine liquid is drawn off from the top. The subject, owing to its deep concern to both producer and consumer, needs careful study and investigation.

Four samples of table syrup have been analyzed, one of molasses, one of New Orleans molasses and one of "Black Strap," seven samples in all. The percentage of glucose added will be found in the tables appended.

SYRUP AND MOLASSES BOUGHT IN THE GENERAL MARKET.

Lab No.	TRADE MARK	Glucose	Water	Ash	REMARKS
1	Table Syrup.....	42.48	23.70	1.45	Glucose.
2	Star Crystal.....	28.72	26.91	2.21	Glucose.
3	White Clover Drips.....	34.23	27.61	1.48	Glucose.
4	Diamond Drips.....	45.80	24.65	1.25	Glucose.
5	Honey Drips.....	46.58	23.72	1.50	Glucose.
6	Black Strap.....	25.26	29.82	7.43	Molasses.
7	N. O. Molasses.....	23.28	24.60	4.12	Molasses.

## CREAM OF TARTAR.

As a matter of convenience, I have divided the cream of tartar into two classes.

The samples which were purchased of the druggists are in the druggists group, and those bought of the grocers are in the latter group.

Five of the samples were obtained at the drug stores and the remaining eleven of grocers. All of the samples bought of the druggists proved to be genuine cream of tartar. To the above list one genuine sample may be added from the grocers' group.

With these figures we have six, or forty per cent. of the entire lot pure. I will incidentally remark that the price paid varied from 28 cents to \$1.00 per pound.

Invariably each sample was treated for chloride, carbonate and sulphate before making the test for calcium tartrate. The druggists' group were found to be free from chlorides, carbonates and sulphates. Each number was then treated in its order for calcium tartrate. The grocery group was then tested in the same manner for chlorides, carbonates and sulphates. All with one exception contained calcium sulphate. It would be well for those purchasing cream of tartar to remember that pure cream of tartar cannot be bought for much less than from sixty to eighty cents per pound. By consulting the following table a general idea may be had of the cream of tartar sold in our markets.

## REPORT UPON CREAM OF TARTAR BOUGHT OF DRUGGISTS AND GROCERS.

Laboratory No.	Of whom purchased.	Cream of Tartar	Calcium sulphate (terra alba.)	Flour of starch.	Alum.	Ash.	How adulterated.
9	Druggist...	95.94	None.	None.	None.	36.10	Pure cream of tartar.
11	Druggist...	95.64	None.	None.	None.	36.90	Pure cream of tartar.
15	Druggist...	97.82	None.	None.	None.	36.40	Pure cream of tartar.
17	Druggist...	96.43	None.	None.	None.	37.30	Pure cream of tartar.
22	Grocer.....	97.46	None.	None.	None.	36.90	Pure cream of tartar.
30	Druggist...	95.86	None.	None.	None.	36.38	Pure cream of tartar.
12	Grocer .....	None.	Present.	Present.	Present.	34.20	Terra alba, starch, alum.
14	Grocer .....	None.	Present.	Present.	Present.	79.12	Terra alba, starch, tartaric acid.
20	Grocer .....	None.	Present.	Present.	.....	57.70	Tartaric acid, gypsum, starch
21	Grocer .....	None.	Present.	Present.	.....	64.10	Tartrate potash, terra alba, starch.
23	Grocer .....	None.	Present.	Present.	.....	20.15	Tartaric acid, terra alba, starch.
24	Grocer .....	None.	Present.	Present.	.....	58.10	Gypsum, tartaric acid, starch
25	Grocer .....	None.	Present.	Present.	.....	65.21	Calcium sulphate, flour, etc.
26	Grocer .....	None.	Present.	Present.	Present.	63.70	Terra alba, starch, alum.
27	Grocer .....	None.	Present.	Present.	Present.	79.90	Terra alba, starch, alum.
28	Grocer .....	None.	Present.	Present.	Present.	69.42	Terra alba, starch, alum.
29	Grocer .....	None.	Present.	Present.	.....	46.67	Terra alba, starch, tartaric acid.

## SPICES.

Perhaps there is no form of sophistication more prevalent in the United States than the adulteration of spices. Those most subject to this species of fraud are allspice, cinnamon, cloves, mace and ginger. The ease with which various cheaper substances may be added to the above spices is the principal cause of their general adulteration.

Mr. Clifford Richardson, assistant chemist of the United States department of Agriculture, describes spices as consisting of certain selected parts of aromatic or pungent plants possessing a characteristic anatomical structure and proximate composition, which, when they have been

carefully studied and recorded, serve as a means of recognizing the pure substances when under examination. This accomplished, it is an easy matter to distinguish them from the different structure and composition of the adulterants which have been added to the genuine. Treating the various spices in their order as the tables are arranged, we find:—

## ALLSPICE,

Which, owing to its cheapness, is less liable to adulteration than other spices. It is frequently the case, however, that clove stems, mustard husks, ground shells and the removal of the volatile are sometimes practiced. Genuine allspice should contain about five per cent. of oil. The reader is referred to the tables:

## ALLSPICE (ground).

LABORATORY NUMBER.	Moisture.	Ash.	Volatile oil.	Non-Volatile oil.	Remarks.
114.....	9.50	2.70	2.25	5.75	Poor quality.
113.....	8.50	1.47	3.25	3.00	Good quality.
123.....	6.75	2.15	2.00	3.25	Poor quality.
157.....	6.50	2.32	1.50	3.00	Poor quality.
160.....	8.75	2.05	1.75	4.00	Poor quality.
174.....	7.60	1.80	6.25	3.25	Good quality.
172.....	8.20	1.50	2.00	4.50	Fair quality.
178.....	8.10	1.90	2.24	3.75	Fair quality.
188.....	7.95	2.12	2.40	4.15	Fair quality.
190.....	7.40	1.76	1.85	3.70	Poor quality.
209.....	7.60	2.15	3.50	3.85	Fair quality.

## CLOVES.

No other spice enters more largely into the culinary department than cloves. The aromatic qualities of this spice make it exceedingly popular in the preparation of preserves and pickles. The value and importance of the volatile oil is often the cause of cloves being deprived of this constituent. A genuine article of cloves usually contains about 17 per cent. of volatile oil. The usual adulterants of cloves consists of clove stems, allspice, crackers and burnt shells.

## CLOVES, (ground.)

LAB. NO.	Moisture.	Ash.	Volatile oil.	Fixed oil.	Crude fiber.	Alum. oils.	Remarks.
106.....	15.00	5.50	5.70	5.00	17.42	5.60	Adulterated.
115.....	13.20	4.80	8.00	2.50	16.20	6.12	Adulterated.
120.....	10.50	6.10	6.00	4.00	15.80	6.25	Adulterated.
158.....	8.25	4.75	13.25	3.50	16.10	6.50	Fair quality.
163.....	10.60	4.00	14.60	4.75	8.75	7.10	Fair quality.
179.....	11.00	4.30	8.50	3.75	13.70	5.80	Adulterated.
186.....	10.60	6.28	5.00	3.50	14.70	6.20	Adulterated.



## CINNAMON.

The more common admixtures to be found in cinnamon are cassia, ground shells, cracker dust, etc.

## CINNAMON, (ground.)

LAB. NO.	Water.	Ash.	Vol'tle oil.	Fixed oil.	Crude fiber.	Under'ted.	Remark.
103.....	8.00	3.22	1.50	2.25	14.60	70 43	Cassia, etc.
112.....	10.10	4.50	4.06	1.00	16.12	64.28	Cassia, etc.
129.....	10.12	3.50	2 25	2.00	17.10	65 03	Cassia, etc.
150.....	9.00	2.60	1.75	2 00	17.15	68 50	Cassia, etc.
161.....	11.50	4.75	2 25	1.75	15.18	63.95	Cassia, etc.

## GINGER.

The admixture of corn meal, mustard husks, cayenne and clove stems are resorted to in the sophistication of ginger. Manufacturers of ginger extract often dispose of the exhausted article to spice dealers. These dealers utilize the impoverished product for the adulteration of other spices.

## GINGER, (commercial ground.)

INSPECTOR'S No.	Water.	Ash.	Vol'tle oil.	Fixed oil.	Star'h.	Remarks.
101.....	9.60	4.70	2.20	3.80	48.12	Cayenne, corn meal, starch and turmeric.
116.....	8.90	5.10	2.60	3 09	49.18	Corn meal and turmeric.
124.....	10 20	5.30	2.40	2 38	50.12	Pure.
162.....	10.30	5.12	2.13	1 98	50.37	Pure.
175.....	9.72	4.96	2.25	2.10	48.12	Dust and crude fiber.
187.....	8.78	5.14	1.97	2.30	47.98	Meal, turmeric, etc.
201.....	9.82	5.15	2.10	2 19	48.90	Pure.
208.....	9.87	5.40	2.28	1 87	49.15	Pure.
180.....	8 96	5.60	1.88	2 10	48 78	Dust, fiber and turmeric.
189.....	9.48	5.32	2.28	2.50	50.25	Pure.
151.....	9.80	5.12	2.17	1.97	50.10	Pure.
152.....	9.88	5.20	2.10	2.12	49.12	Dust and crude fiber.

## MUSTARD.

The mustard flour which constitutes the domestic spice is prepared from the mustard seed crushed between rollers. The flour is then pounded, sifted and resifted into three qualities, viz: "superfine," "fine" and "seconds." Only the seeds of the white and black species are supposed to be employed. It is more than likely that much of the third kind finds its way into the composition, as for instance, flour, turmeric and capsicums are known to be found in the lower grades of the article.

Manufacturers and dealers in mustard, claim that the pure article possesses too acrid a taste to be suitable for use as a condiment. Therefore they add to it wheaten flour, starch and turmeric. The foregoing substances are so generally resorted to, that the state board of health of New York in 1883, legally sanctioned the practice. With this provision: If an admixture, it was to be distinctly stated on each package.

Other forms of adulteration consist in the partial extraction of the fixed oil. This is done before its introduction on the market. Still others are the addition of cocoa, nut shells, terra alba and Martins Yellow,

(potassium dinitronaphthalate.) The latter coloring matter is more especially objectionable as it possesses poisonous principles and certainly would be deleterious to health.

## GROUND MUSTARD.

Inspector's No.	Water.	Ash.	Coloring.	Remarks.
102	7.205	5.00	None .....	Pure.
117	8.10	10.50	Turmeric.. .....	Adulterated with flour.
164	7.52	14.50	Turmeric.....	Corn meal and cracker dust.
173	7.94	7.00	Turmeric.....	Cracker dust and foreign matter.
176	6.80	9.50	Martin's Yellow....	Cracker dust and foreign matter
177	6.9	5.50	None. ....	Pure.
185	7.63	10.30	Martin's Yellow....	Cayenne, corn meal and for. matter.
207	6.72	5.00	None .....	Pure.
205	7.48	8.90	Turmeric.....	Corn meal and foreign matter.

## GROUND PEPPER.

Inspector's No.	Moisture.	Ash.	Ash soluble in H <sub>2</sub> O.	Ash soluble in H <sub>2</sub> Cl	Insoluble.	Remarks.
115	12.00	9.50	2.10	4.00	3.50	Cracker dust, foreign matter, etc.
111	8.50	12.00	1.90	5.50	4.60	Adulterated.
118	8.00	9.50	3.20	1.50	4.80	Adulterated.
121	8.50	10.00	.90	1.80	7.30	Meal, pepper dust, etc.
126	8.00	7.50	1.70	2.50	2.80	Pure.
130	10.50	3.50	1.20	1.00	1.30	Pure.
152	7.70	7.30	1.70	1.50	4.10	Mixed with pepper hulls.
159	7.50	8.50	2.00	2.00	4.50	Fair quality.
181	10.00	6.40	1.40	3.80	1.20	Corn meal, cayenne, etc.
182	6.50	6.30	1.50	1.50	3.30	Fair quality.
854	8.50	11.50	4.70	2.00	4.80	Mixed with hulls, etc.
205	9.00	3.00	2.00	.50	.50	Pure white pepper.
204	8.60	4.20	.....	.....	.....	Cayenne pepper.

## PEPPER.

Black pepper is derived from the plant "piper nigrum." Whole black pepper is seldom or never adulterated in Europe. In India the berries of embelia (samara) are often mixed with the spice for sale. Ground pepper, on the other hand, is frequently sophisticated with starches, pepper dust and other foreign matter.

White pepper is produced by the same plant as black pepper. White pepper is prepared by allowing the berries to ripen, keeping them for three days in the house after gathering. They are then washed and bruised in a basket with the hand until the stalks and pulp are removed. Then the drying of the white seeds completes the process. Sometimes white pepper is prepared from the black by the removal of the dark outer layer of the pericarp.

## SUMMARY OF SPICES.

A general summary of the spices purchased in the open market reveals the fact that adulteration is practised to a large extent.

Of the sixty-five samples examined and analyzed, 44 or 68 per cent. of the number show admixture and sophistications. Only 21 or 32 per cent. of the entire lot can be classed as pure spices. If this species of fraud is to be carried on, or if a certain class of dealers and consumers demand goods of an inferior grade, then it is no more than just that others who want pure goods should have them. In order to insure the honest dealer and consumer against fraud, if the package is an admixture, it should be plainly stated on the label. The formula ought invariably to be printed on the package.

## DRUGS AND MEDICINES BOUGHT IN THE RETAIL MARKET.

No. of samples.	NAME OF ARTICLES.			Remarks.
		Pure.	Adulterated.	
4	Fowler's solution .....	3	2	Not standard strength.
4	Syrup iodide of iron.....	2	2	Acid reaction.
6	Acid hydrochlovic.....	4	2	Iron and sulphuric acid.
3	Acid aromatic sulph.....	1	4	Not standard strength.
7	Paregoric .....	4	3	Licorice and coloring matter.
5	Rochelle salts. ....	3	2	Not standard.
8	Bromide of potassium.....	5	3	Excess of alkali.
16	Iodide of potassium.....	11	5	Excess of alkali.
5	Bitartrate of potassium....	5	....	Pure.
11	Spirits nitrous ether.....	8	3	Absence of ether nitrite.
5	Powdered jalap.....	3	2	Deficient in resin.
4	Comp. spirits ether.....	1	3	Absence of ethereal oil.
5	Tinct. nux vomica.....	2	3	Not standard.
7	Oil of cubebs. ....	4	3	Turpentine present.
6	Oil of juniper.....	3	3	Turpentine present.
5	Ipecac .....	4	1	Not standard.
102		63	39	

## DRUGS.

It has not been possible for me to enter into an extensive examination of drugs.

The number of samples examined were 102. Thirty-nine, or 38.2 per cent. were found to be deficient, according to the requirements of the U. S. Pharmacopœia, that is, not of standard quality.

The drugs as herein examined are among those most often used. The adulteration of drugs may be brought about through various sources. Drugs and chemicals which come from the manufacturer in a pure state are as a rule so dealt out to the customer, or so incorporated in other ingredients and medicines. To this general rule there are exceptions. Occasionally there will be found a wholesale or retail dealer, *sans principe*, *sans conscience*. Those exceptions, however, are rare.

The excellent drug laws now in force in most of the States have worked a great revolution.

One whose choice of vocation is in the druggists' line may now be looked upon as a professional man. The novices and tyros must needs retire. The pharmacist of to-day is educated for the business. Not only



in theory, but must have the practical experience of at least four years before he can be licensed as a full fledged pharmacist. What is the outcome? The result is this: The business takes a higher plane. The men representing this line of business or profession, have great responsibility thrust upon them. They need to be educated; they need to be practical. The result is we have purer drugs, finer preparations, and mistakes are reduced to the minimum.

In the examination of the drugs as here given, the greatest evil which I discover is that of neglect. Certain chemicals and certain preparations must have constant care. It is eternal vigilance that keeps them in proper condition either for sale or for administering in prescriptions. Neglect robs the remedy of its medicinal virtue, the patient of his health, and the pharmacist of his reputation.

#### SPICES AND ADULTERATIONS.

The extent to which the adulteration of spices is being carried on is truly alarming. It is only necessary to read Dr. Wiley's report bulletin No. 13, Division of Chemistry, United States Agricultural reports, the Massachusetts State Board of Health report on adulterated foods, the Dairy and Food Commissioners' reports of New Jersey and of Ohio. With great care have the officers of these various commissions and boards obtained the data which they have submitted relating to the adulterating of spices. The attention of the consumer is called in particular to what has been written. The consumer is the one that eventually suffers the most. In the first place he is defrauded by paying a first-class price for an adulterated article. Secondly, he is sooner or later robbed of health by the continuous use of these deleterious substances incorporated in spices. Third, these fraudulent condiments ought not to be tolerated, owing to the fact that none but an expert can with any degree of certainty detect their spurious character.

Not only in the United States is this species of fraud practiced, but in England, France, Germany, and over the entire continent of Europe. Great attention has been given this subject in England in particular. For the benefit of the consumer I here give the views of an English chemist on the subject:

"Pure spices are debased for pecuniary profit by adding to them inferior and spurious articles, or by taking from them one or more of their constituent parts. The practice has grown with present-day competition, in spite of severe laws prohibiting it. It is not at all an uncommon thing to see ground spices sold at less than half the price of the unground article, a fact which sufficiently indicates that grinding is not the only process which the spice undergoes. It means, of course, that the ground spice has been more than doubled in its bulk by the addition of some much cheaper substance. Some firms go so far as to advertise adulterated goods, and evade the law by calling them compounds. Ground ginger is adulterated with meal, rice, flour, starch, cayenne pepper and manila rope. The true ginger root has a very fine, hair-like fiber running through it, and this is found in the ground article. Many people will not buy ginger unless they see the fiber, and bits of ground rope are made to take their place in the adulterated article. The cayenne pepper gives the necessary pungency. Sometimes chrome yellow, a poisonous article, is used for coloring. Cloves are adulterated by an admixture of the dried and ground twigs of the trees from which the cloves are gathered; also with ground cocoanut shells and pepper dust. Allspice is also treated in the same way. Considerable cleverness is shown in the adulteration of cinnamon and nutmeg. Stale and broken biscuits, or damaged and com-

mon flour, are baked in an oven and afterwards ground up to a fine powder, and this is freely mixed with the ground cinnamon and nutmeg. In adulterating mace, Venetian red is mixed up with this baked dust. Cayenne pepper is adulterated with meal, farina, cocoanut shells, Venetian red, and salt, the whole being ground up together. The salt gives a brighter color to the red, which is itself a poisonous substance. In some cases the essential oils are even extracted from the pure spice prior to the grinding."

#### HONEY.

Four samples of honey have been received and analyzed. None of these were in the comb, but all strained, and labeled pure honey. Of this number I knew the source of but one. This was from a Minnesota apiary and proved to be pure. Two of the others were of fair quality, and the fourth contained about 75 per cent. of glucose.

In Bulletin No. 13, part 6, issued by the United States Department of Agriculture, Division of Chemistry, is given a most excellent report on honey.

This report is by Dr. H. W. Wiley, with the collaboration of ten other chemists, located in different parts of the Union, and who have recognized ability. The investigations have been thorough and complete, and show excellent work, not only in honey, but also in sugar, syrups and candies. Perhaps there is no article of food, says Dr. Wiley, which has been so generally adulterated in the United States during the last twenty years as honey. The ease with which sophistication could be practiced, the cheapness of the material used, and the high price of the genuine product, have presented temptations which the manufacturer, producer and dealer have not been able to withstand.

"As long as the honey was sold in the comb, the difficulties in the way of successful sophistication were so great as to practically preclude its practice. \* \* \* \* \* "The true friend of the apiary interests of the country is not he who shuts his eyes to patent adulterations, but rather he who recognizes facts, even if unpleasant, and who, having seen the enormity of the extent of honey adulteration, supports the labors of those who seek to detect and prevent it."

In his suggestions, as to the methods to adopt for the judging of the purity of honey, Dr. Wiley, says: The standard of pure honey is not hard to fix. By universal consent it may be stated that a pure honey is the nectar of flowers, and other saccharine exudations of plants, gathered by bees, and stored in cells, built at least in part by the bees themselves.

Honey made by feeding bees glucose, sugar, or other saccharine substances, is not pure honey. Nor is that pure honey which is made by adding to an empty or partially filled comb glucose, or any other saccharine substance. Strained honey, that is, honey separated from the comb, is pure, when it contains only the materials of a liquid nature, mentioned in the definition of pure honey, given above, with such accidental solid particles, such as pollen, parts of bees, fragments of comb, etc., as would naturally be found therein.

#### PROPERTIES OF PURE HONEY.

*Polarization.*—A pure honey has, with rare exceptions, at ordinary temperatures, a slight left-handed effect on a plane of polarized light. This lævo-rotary power is less than that produced by pure invert sugar. Measured as degrees on a cane sugar scale, with normal sugar weight, a pure honey will rarely show more than 20 degrees at 20 degrees C. A greater number than this may not be conclusive adulteration, but may well be looked on with suspicion.

*Water.*—The contents of water in pure honey may vary from 12 to 20 per cent. It is rarely as low as 12 and does not frequently exceed 20 per cent.

*Color.*—The color of pure honey may vary from almost a water white through various shades of amber to deep brown or black. The source from which honey is taken, the manner in which it is stored, and the length of time it has been kept are the chief factors in determining variations in color. White clover and basswood give almost a colorless honey, while golden rod and other high colored flowers produce a deep colored article.

*Ash.*—The content of ash is very small, varying from a mere trace to .03 per cent. A higher content of ash than this will be due to dust sifting over the flowers while the bees are at work, or to some tampering with the product after the bees have finished with it.

*Sucrose.*—The amount of cane sugar varies from nothing to 8 to 10 per cent., according to the quantity of cane sugar in the nectar and the extent of inversion to which it is subjected in passing the organism of the bee.

*Reducing Sugar.*—In pure sugar there should be a large per cent. of reducing sugar, measured as dextrose. This reducing sugar should consist of dextrose and levulose, naturally existing in the nectar.

Whenever the dextrose is in excess of the levulose it points to its artificial addition in the form of glucose or grape sugar of commerce. The total quantity of reducing sugar, measured as dextrose, should generally fall between the limits of 60 and 78 per cent., although there are many cases where these limits may be transgressed.

*Pollen.*—Some idea of the purity and source of honey may be derived from a microscopic examination of the pollen which it contains.

H. Hagar, a German chemist, as early as 1870 succeeded in producing an artificial honey by the action of oxalic acid on wheat, maize, buckwheat and other cereal starches. The author in order to produce a honey-like glucose found it necessary to use oxalic instead of sulphuric acid; potato starch could not be used.

Prof. H. H. Nicholson, in giving the results of his analysis of fifty samples of honey, found thirty-eight adulterated to twelve doubtful and genuine samples. Or in other words seventy-six per cent. of the entire lot proved to be adulterated. The packages of honey were ingeniously labeled and very misleading. The following is a fair illustration:

"Pure California Honey," "Pure Honey," "White Clover Honey," "California Honey," "Pure Honey," etc. The analysis of the samples of honey purchased in the markets of San Francisco, and reported by Prof. Rising, reveal a different condition of affairs. But nine of the samples, or eighteen per cent., analyzed by Prof. Rising, showed adulterations; No. 65 of the above lot, and labeled "Pure San Diego Honey," "bottled expressly for family use," contained from seventy-five to eighty-five per cent. of glucose. No. 140 is pure glucose, with probably only enough honey added to give it a little flavor. And thus we might continue to make excerpts from the reports of Drs. Sharples, of Boston, Shippen Wallace, of Philadelphia; Weichman, of New York; Stubbs, of New Orleans; Prof's. Scoville, of Kentucky; Weber, of Ohio, and Huston of Indiana. Their reports all show the percentage of adulteration in honey large. A notable exception being that of Dr. Sharples, of Boston.



The wholesome effect and the practical working of a good anti-adulteration law in Massachusetts has been the means of largely correcting the evil in that commonwealth, only six samples or twelve per cent. Dr. Sharples found to be adulterated.

These data are sufficient to prove that commercial honey is largely adulterated. Relative to the honey of our own State and the conditions of the markets, a thorough investigation would, undoubtedly, reveal a similar state of affairs.

#### MANUFACTURED EGGS.

About the first of January, 1892, a new enterprise all of a sudden started up in St. Paul. This new industry was none other than the production of manufactured eggs. It was subsequently learned that the eggs in question were made in St. Louis and shipped to St. Paul.

So remunerative had this enterprise become that bogus eggs were being sold in large quantities in the markets. The method was to have one firm here to handle them and mix with them a certain number of genuine eggs. Fortunately, or otherwise, the dealers purchasing these goods were not as careful as they might have been. In this way a goodly number had been placed upon the market before the fraud was discovered. It so happened that one gentleman was not favorably impressed with the style of article, and to satisfy himself as to their real character, furnished the Commission with a few for examination. To the casual observer, there was nothing to arouse suspicion in the outward appearance of the egg. The weight, size, color and general appearance comported with a real egg. The shell when broken indicated that it was the genuine article. Even the film next the shell was not forgotten. The physical appearance of the egg was all one could wish. The analysis revealed a different state of affairs. Evidently they had molds in which the ingredients of the egg were run. The yolk first. The analysis showed this part to be composed of gelatine, sulphur and colored with turmeric. It was lacking in fats, and of course did not possess vitelline. Surrounding a large portion of the yolk was the white, this being composed of gelatine, next in order the film, which would not dissolve in dilute hydrochloric acid. Lastly, the shell which was without crease, wrinkle or anything to cause the least suspicion.

As eggs are now so cleverly imitated it may be of interest to some of the readers to know the composition of eggs and their relative value as compared with other foods.

About two ounces avoirdupois is the average weight of an egg. The quantity of dry solid matter contained in an egg does not greatly vary from 200 grains. The entire contents of an egg and its composition are these:

Nitrogenous matter.....	14.0
Fatty matter.....	10.5
Saline matter.....	1.5
Water.....	74.0
	<hr/>
	100.0

The white of an egg contains much more water than the yolk. In it there is an entire absence of fatty matter, but is largely composed of albumen in a dissolved state and inclosed within very thin walled cells. The ropy gelatinous state of the egg is caused by this arrangement. The

entire fatty matter of the egg is accumulated in the yolk, which often amounts to as much as 30 per cent. The yolk contains a relatively less proportion of nitrogenous matter than the white. An enveloping membrane or bag surrounds the yolk, thus keeping the fluid matter of which it is composed together.

Respectfully submitted,

W. S. EBERMAN,  
Chemist.

## REPORT OF THE WORK DONE

In the Chemical Laboratory of the Minnesota State Dairy and Food Department at Minneapolis,

BY THE CHEMIST, CHARLES W. DREW, PH. B., M. D.,

*Formerly Assistant to the Professor of Chemistry, Medical Department University of Vermont; formerly Professor of Chemistry, Minnesota Hospital College; Director of Minnesota Institute of Pharmacy.*

MINNEAPOLIS, MINN., Oct. 1st, 1892.

*Hon. A. K. Finseth, State Dairy and Food Commissioner :*

DEAR SIR—I herewith submit to you the following detailed report of the chemical analyses made and other work performed, in accordance with your instructions, at the chemical laboratory of the State Dairy and Food Department at Minneapolis, during the biennial period just closed.

During this period I have received and submitted to careful chemical analysis the following samples. The general results may be summarized as follows :

NATURE OF ARTICLE.	No. of samples analyzed.	Pure or of standard quality.	Adult/rat'd or below standard.
Milk.....	364	155	209
Cream.....	11	5	6
Butter.....	114	92	22
Cheese.....	715	693	22
Vinegar.....	2,122	1,585	537
Baking powder.....	167	33	134
Lard.....	483	475	8
Liquors.....	21	8	13
Coffee.....	35	.....	35
Ground spices.....	30	13	17
Miscellaneous.....	66	34	32
Total.....	4,128	2,093	1,035'

The inspection of the dairy and food products of the State has been very thorough and complete. The results as given in the above table, comprising as it does samples from 163 different towns, may be considered to express very fairly the condition as to quality of the various articles in the list, not in a restricted portion of the State alone, but in the State as a whole.

## REPORT UPON MILK.

There have been received during the period covered by this report, 364 samples of milk. The result of their analyses are as follows:

Number of samples analyzed.....	364
Number of samples above standard .....	155
Number of samples below standard .....	209
Number of samples deficient in fat.....	190
Number of samples containing an excess of water.....	5
Number of samples containing an excess of water and deficient in fat .....	14

The results of the analyses of milk as given in the above table give no ground for forming an opinion relative to the character of the milk supply of the market, for the reason that all samples of milk which are collected by the inspectors are submitted to a preliminary inspection and only such samples as are found to be of abnormal character are ordinarily transmitted to the chemist. In the present instance, in addition to those samples which were of suspicious character, a considerable number of additional samples were subjected to analysis, for the purpose of determining the accuracy or otherwise of the preliminary tests employed by the inspectors of the department, and thus the number of samples which are reported as of standard character is greater than would otherwise have been the case. Prior to the period covered by this report it had been customary to test all milk samples by the use of the lacto-densimeter which gave the specific gravity of the milk, and to determine the amount of fat by the use of Feser's Lactoscope. This instrument is based upon the theory that if to a given volume of milk placed in the instrument, there was added water, and the mixture thoroughly agitated, the opacity of the mixture would be reduced proportionately to the amount of fat which it contained, and that by successive additions of water until a standard degree of opacity was obtained the amount of fat contained in the milk could be determined from the volume of the mixture. This method was demonstrated to be fallacious and unreliable for the reason that the physical configuration of the fat globules themselves varies in different lots of milk, and hence the degree of opacity of the sample is not proportionate to the amount of the fat; and also that variations in the amounts of the non-fatty constituents of the milk exercised a not inconsiderable influence upon the degree of the opacity, and the diminution of opacity when diluted with water.

During the last two years the method proposed by Dr. Babcock, of the Wisconsin Agricultural Experiment Station, has been adopted in all preliminary work, and the results have proven much more satisfactory. This method is based upon the fact that when to a standard measured volume of the milk placed in a bottle provided for the purpose, and suitably graduated upon the narrow neck, there is added a sufficient quantity of strong sulphuric acid, and a mixture carefully effected, the casein of the milk is dissolved and the fat globules liberated. A complete separation of the fats is secured by placing the tubes or bottles in a centrifugal machine and whirling them for from three to five minutes, after which the bottles are filled with warm water so as to cause the separated fat to rise into the graduated neck of the bottle, after which they are whirled again for about one minute, when the volume of the fat can be read off in per cents and tenths of per cents upon the graduated scale. This method is particularly convenient for the reason that a large



number of tests can be conducted simultaneously, and that the tests can readily be made by any person of ordinary intelligence after a reasonable amount of practice and experience.

Extended comparative investigations have demonstrated the accuracy and value of the "Babcock Test" for the fat in milk, and it is without doubt the most readily applied and valuable of any of the methods which have been proposed. It is of great value in the creamery and milk depot, where it is desirable and necessary to ascertain the richness of milk in fats, and it is a source of gratification that it is being so generally adopted and used for such purposes in this State.

It is shown by the examinations which have been made that the amount of actual adulteration by skimming or watering is very little at the present time, although there is a very considerable amount of poor milk still furnished to the public. This is unquestionably the product of cows which are in such a state, either from individual peculiarities or from imperfect physical condition, due either to *disease* or to defective nutrition from inadequate or improper food, or from insanitary surroundings, as to be unable to produce milk which is of an average degree of richness and suitable for food.

There is but one way in which this state of things can be remedied; namely by supplementing the inspection of the milk as delivered from the carts, depots, etc., by a systematic inspection of all dairies producing milk for public consumption, with reference to their sanitary condition, the physical state of the animals themselves as regards health or disease, the character of food or water given, and if necessary the richness or poverty of the milk of the individual cows forming the herd.

It is unquestionably a fact that the milk given by a properly nourished herd of healthy cows will equal or exceed the standard established by law in this State, hence each dairyman who produces milk for public sale and consumption should be held as strictly accountable for its character as influenced by the circumstances surrounding its production, as he is with reference to its subsequent adulteration.

Such inspection has been practiced to a limited extent, but not to the degree which its importance warrants, in view of the fact that milk forms a staple and important article of food in all communities, and that other deviations from its normal character may be even more important from a hygienic standpoint than the addition of water, or the abstraction of a portion of the fats.

That a cow can produce pure and healthy milk suitable for food while in surroundings which lack every element of cleanliness and sanitation, is absurd. Compulsory attendance to the principles of sanitation should be insisted upon in every dairy producing milk which is marketed in any form. The situation of the stables should be such as to admit of ready drainage and the removal of all refuse. The stables should be well lighted and ventilated, commodious and cleanly. The bodies of the animals should be cared for daily and the udders and teats invariably cleaned before milking. The giving of proper food in sufficient amount, and of an abundance of pure water should be demanded, and the stoppage of the use of improper and unhealthy foods required and enforced. By supplementing the system at present in vogue by such inspection as should be effective within the field outlined, the results could not fail to be satisfactory and the milk supply to be still farther improved in character.

In order to secure the much needed attention to these matters and their correction to a large extent by the dairymen themselves, it would be well to judiciously modify the laws relating to them in such a manner that the violation of the sanitary requirements relative to cleanliness, ventilation, overcrowding and improper feeding of dairy herds was in itself, when established by competent testimony, an offense punishable by law, without requiring proof of the unwholesome character of the milk produced and sold, as is the case under the present laws governing this department.

#### REPORT UPON CREAM.

In composition, cream is similar to milk, except that it contains a much larger percentage of fat, a somewhat increased proportion of casein and albumen, and a diminished amount of milk, sugar and salts. The dairy law of this State requires that cream, to be sold as such, shall contain not less than twenty per cent. of fats. This is a very moderate requirement indeed; yet of eleven samples recently examined, six were below the required standard. While, of forty-seven analyses which have been made during the connection of the writer with the department, all but ten have been below standard. The reason for this, undoubtedly is, that the time for the creaming of the milk is too short for the proper solidification of the cream, and also that the skimming is performed in a perfectly arbitrary manner. One gallon is removed from every five-gallon can of milk, regardless of its purity or richness, as well as regardless of the fact that an ordinarily rich milk will not produce more than about twelve per cent. of its volume of really good cream. I have frequently placed a sample of the cream purchased in the market in a suitable cream glass, and found that it divided itself into two strata, the upper one of cream, usually forming only from fifty to seventy per cent. of the volume of the mixture, thus readily showing the presence of a very large amount of milk as an adulterant.

#### REPORT UPON BUTTER.

The inspection of butter has been general and thorough, especially in the larger cities of the State. One hundred and fourteen samples have been received and analyzed. These were from the leading hotels, restaurants, dining rooms, etc., as well as commission houses and stores. Of these, 92 proved to be genuine butter and 22 to be oleomargarine. These latter samples represented 22 different packages constituting six different lots which were seized and confiscated by the officials of the department.

The 92 samples of butter examined presented a very considerable variety. Some were high-grade dairy and creamery samples, while others were of very poor quality, though free from adulteration.

Several other samples were examined which were stated to be so-called "patent butter," made by the churning of cream with the addition of a certain proportion of butter and of chemical agents. This process was advertised by the agents offering the recipe for sale to insure a gain in the butter yielded, of from 30 to 50 per cent. The supposition was that this method produced a butter with which was mechanically incorporated an unnatural and abnormal amount of the caseine or curd of the milk, thus making a cheesy mixture of greater weight and lessened proportion of fats. Examination, however, proved such not to be the case, the only abnormality which was found being an unnaturally high proportion of water, reaching in some instances, as high as 25 per cent.

## REPORT UPON CHEESE.

Cheese is a solidified preparation from milk, and, like all products of milk, contains a greater or less proportion of all of its constituents. The caseine or curd is the most distinctive, abundant and least variable of all its ingredients, while the fatty matters are subject to the greatest degree of variation in their amounts. Cheese thus being a compound substance of no definite chemical composition, it is found in commerce in many different varieties and qualities. The quality and the composition of the milk operated on are of prime importance in cheese making. Not only does the milk vary widely in richness and flavor, owing to the breed, the nature of the food, and the health of the animal yielding it, and many other circumstances, but the differences are still further increased by sometimes adding cream, or by using the milk as skim milk or milk deprived of a portion of its fat. The object of the cheese maker is to obtain in a solid form as large a proportion of the caseine and butter contained in the milk dealt with as possible. There are found in the different markets of the world many varieties of cheese, to which distinctive names are given. These names usually depend upon the locality where the cheese is made, the shape of the cheese, its peculiar flavoring agents, etc. The varieties which are best known in commerce can be classified and considered as follows:

*First*—Cheese made by coagulating pure cream. The general process of manufacture is similar to that usually adopted for other varieties, but the curd is not subjected to any considerable pressure, lest a portion of the fat be lost. It contains a very large proportion of fat and but little caseine. It is a soft and very rich cheese, and requires to be eaten soon, as it speedily undergoes decomposition and becomes unfit for use.

*Second*—Cheese made from whole milk with more or less cream added, commonly known as cream cheese, is a rich cheese which keeps well when properly cured. The best known varieties are Stilton Suisse, and Suisse double cream.

*Third*—Cheese made from whole milk, and generally known in this country as full cream cheese, Neufchatel, Gruyere, Cheddar, Gonda, Dunlap, Double Gloucester, Gorgonzola, Edam, Pineapple, and most of the American cheese come in this class.

*Fourth*—Cheese made from milk from which more or less of the cream has been removed: as Camembert, Parmeson, Single Gloucester, American "night skimmed," and the ordinary varieties of cheese made from nearly or fully skimmed milk, such as are common in all American markets.

## CHEESE AS FOUND UPON THE MINNESOTA MARKET.

As in most localities there can be found upon the market numerous varieties of cheese. The ones which I purpose considering are those which depend upon the degree of richness of the sample, and are classed as skim, part skim, and full cream cheese.

During the period covered by this report the inspection of the cheese supplied to the people of the State has been extremely thorough, a very large number of samples having been collected and transmitted to the chemists for examination from all portions of the State. The results of the inspection show that a large proportion of the cheese on sale in the State is of the variety known as full cream, and that the proportion of



the less acceptable and nutritious skim and part skim cheese is considerably diminished. The summary of the results of the analyses of the cheese received is as follows :

Total number of samples analyzed.....	715
Total number represented as full cream.....	705
Total number found to be full cream .....	683
Total number represented as full cream cheese which were not.....	22
Total number represented to be skim or part skim..	10
Total number of these found to be such.....	10

Of the 22 samples represented to be full cream which were found to be part skim or skim cheese the sources of manufacture were as follows ;

Minnesota cheese, 3; Wisconsin cheese, 5; Iowa cheese, 3; Chicago cheese, 2; of unknown origin, 12.

It is to be regretted that the laws of the State do not require that all cheese exposed for sale within the State be so branded as to furnish conclusive evidence as to the source of its manufacture, in order that violations of the law might be traced to their actual source, and the responsibility thus be placed upon the manufacturers rather than upon the sellers, as is often the case at present. Of the samples received by the writer a large number were reported by the inspectors as of unknown origin, and a much greater number bore the brands of wholesalers or jobbers merely, thus leaving the manufacturer unknown. Of the 715 samples examined, no less than 325 were destitute of a manufacturer's brand and bore either those of the wholesaler or none at all.

It is a source of gratification to the officials of this department to be able to report that as a result of such a general inspection and extensive analysis that of those samples represented by retail dealers to be legal full cream cheese 96.8 per cent were found to conform to the legal requirement, and only 3.2 per cent to fall below the standard.

#### MINNESOTA FULL CREAM CHEESE; ITS RELATION TO THE ESTABLISHED STANDARD.

That Minnesota is admirably adapted for the successful prosecution of the dairy industry in all of its branches there is no question. The dry atmosphere, the pure water, the salubrious climate and abundant grasses all tend to the production of plentiful and rich dairy products. No state is capable of producing richer or better milk, and in no section can a sweeter or more delicately flavored butter be found, while in the matter of cheese, it has been stated that even the county of Cheshire, in England, does not possess in a greater degree, all the requisites for the production of a large yield of the finest flavored cheese, than does Minnesota. It is further stated that a larger amount of cheese can be made from a given quantity of milk, in Minnesota, than in any of the other dairy states of the Union, and that this cheese, when properly made and ripened, holds in a perfect flavor and condition for a longer period than that made in many other sections. There are thus seen to be many reasons why the dairy interests of Minnesota should, within the immediate future, undergo great development, and why, since our home products are unexcelled in quality, we should become able as a state, to not only completely supply our home market, but to furnish very considerable amounts for export as well.

There is no more certain method of assisting the development of these important industries, than by insuring the maintenance of a high standard of quality, and by educating the people of the State up to the point of considering that since we are capable of producing an article which is equal or superior to that of our neighbors, that home production should be encouraged to the fullest possible extent.

The maintenance of a high standard of quality is largely dependent upon the producers, and can be influenced only indirectly by any other means than through them individually and collectively. The education of the people of the State relative to the comparative merits of our own productions and those of other sections, must be accomplished mainly through the publication of the results of scientific investigations of the several products, and comparisons of the general results.

The principal variety of cheese produced in this State is that which is generally known as the full cream cheese; so called because made from the natural full milk without either the addition or abstraction of cream. Such cheese is rich enough for any ordinary consumer, is of ready digestibility, exceedingly nutritious, and withal a variety that keeps well; in which respects it presents marked advantages over either the too rich cream, or the poorer and indigestible skim-milk cheese.

Since milk varies to a certain extent in its chemical composition as regards richness, naturally the cheese made therefrom will show corresponding variations, and it remains for systematic investigation to decide as to what limits of variation are natural and permissible, and what standard of composition shall represent what can properly be considered as a full cream cheese of standard quality.

In attempting to establish such a standard there is encountered at the outset the element of difficulty incident to the variation in the relative proportion of the various constituents invariably present in cheese, and even in the same sample at different times under different circumstances. Thus the proportion of water in a sample of cheese is constantly subject to change under the influence of evaporation, and this changes the relative amount of all the other constituents very greatly. The proportion of caseine, milk-sugar and salts are likewise variable within much narrower limits, and the fats within limits which lie between.

Several plans have been proposed for the purpose of expressing what should be considered as a standard full cream cheese. The only one which is at present considered practicable is based upon the elimination of the water contained in the cheese from the calculations, and aims to express the proportion of the fats contained in the sample in relation to the total solids. This method in my opinion gives a basis for judging of the character of any given sample which is of great value and sufficiently exact for all practical purposes.

This process requires an analysis of the sample with respect to certain of its proximate constituents, which is carried on substantially as follows: A portion of the sample is reduced to a finely divided condition either by grating or mincing, and a definite quantity, usually five grms. is accurately weighed into a porcelain or platinum capsule. This is allowed to stand for twenty-four or thirty-six hours, until a considerable portion of the water has evaporated and the sample become partially desiccated. It is then treated with petroleum ether until the fats are entirely removed. The residue is then dried at a temperature of 105° C,

until it ceases to lose weight; the weight found represents the amount of non-fatty solids, *i. e.*, the caseine, milk-sugar and salts. The ethereal solution of the fats is then evaporated until the ether is practically expelled, and they are then heated at a temperature of 105° C, until the weight is constant, to determine their amount. The sum of these two represents the total solids, and the difference between this sum and the weight taken gives the proportion of water. The ratio of fats to total solids is then deduced by dividing the percentage of fats by that of the total solids, and pointing off in such a manner as to represent percentage.

The legislature of the State of Minnesota, in 1889, acting upon the recommendation of a committee from the State Dairymen's Association, and the State Dairy Commissioner, established the proportion of fats to total solids necessary in a legal full cream cheese as 40 per cent. At that time grave fears were expressed in some quarters lest the full cream cheese produced in the State of Minnesota should be unable to meet this requirement, and lest it had been unwise to name so high a limit as necessary to give such cheese a legal character. I desire to present such evidence as I have accumulated relative to the propriety of the standard as established, and incidentally to compare the full cream cheese produced in this State with that produced elsewhere.

During the past biennial period a considerable number of samples of cheese made in Minnesota factories have been obtained by the inspectors from various portions of the State; of those reported upon by the writer, nearly all were on sale, and were obtained from dealers and not manufacturers. The sources and composition of these samples examined as follows:

RESULTS OF ANALYSES OF MINNESOTA FULL CREAM CHEESE, 1891-92.

Factory No.	LOCATION OF FACTORY.	Percentage.				
		Water.	Total solids.	Caseine, etc.	Fats.	Fats to solids.
47	Frazee City.....	33.08	66.92	31.90	35.02	52.31
47	Frazee City.....	26.14	73.86	36.84	37.02	50.12
1	Fergus Falls.....	33.30	66.70	31.00	35.70	53.52
1	Fergus Falls.....	33.60	66.40	31.10	35.30	53.16
1	Fergus Falls.....	27.60	72.40	35.50	36.90	50.96
1	Fergus Falls.....	33.78	66.22	34.08	32.14	48.24
1	Fergus Falls.....	38.77	61.23	30.97	30.26	49.76
1	Fergus Falls.....	30.10	69.90	35.64	34.26	49.01
1	Fergus Falls.....	30.36	69.64	33.36	36.28	52.09
1	Fergus Falls.....	32.30	67.70	32.60	35.10	51.84
1	Fergus Falls.....	31.82	68.08	33.10	34.98	51.35
47	Frazee City.....	34.90	65.10	31.70	33.40	51.30
93	Owatonna.....	32.64	67.36	31.92	35.44	52.61
26	Medford.....	29.42	70.58	34.20	36.38	51.41
93	Owatonna.....	26.74	73.26	35.79	37.52	51.21
26	Medford.....	32.04	67.96	32.90	31.06	51.59
26	Medford.....	27.42	72.58	33.38	39.20	53.97
26	Medford.....	29.22	70.78	33.56	37.22	52.58
26	Medford.....	21.00	79.00	41.50	37.50	47.47
26	Medford.....	23.10	76.90	39.10	37.80	49.16
26	Medford.....	33.26	66.74	31.00	35.74	53.55
126	Madelia.....	19.20	80.80	40.50	40.30	49.86
42	Oakland.....	29.72	70.28	33.98	36.30	51.51



## RESULTS OF ANALYSES OF MINNESOTA FULL CREAM CHEESE, 1891-92.—

*Continued.*

Fac- tory No.	LOCATION OF FACTORY.	Percentage.				
		Water.	Total solids.	Cas- eine etc.	Fats.	Fats to solids.
26	Medford.....	21.06	78.94	39.20	39.74	50.34
26	Medford.....	30.48	69.52	34.20	35.32	50.80
93	Owatonna.....	28.96	72.04	36.00	36.04	50.03
121	Me ton.....	31.18	68.82	33.24	35.58	51.66
*16	Heidelberg.....	36.74	63.26	38.02	25.24	39.89
121	Merton.....	34.18	65.82	30.26	35.62	53.95
121	Merton.....	29.70	70.30	33.50	36.80	50.92
26	Medford.....	34.38	65.62	31.70	33.92	51.69
121	Merton.....	29.58	70.42	34.50	35.92	51.01
121	Merton.....	32.44	67.56	32.54	35.02	51.83
26	Medford.....	36.10	63.90	31.90	32.00	50.08
126	Madelia.....	32.88	67.12	33.10	34.02	50.68
26	Medford.....	32.14	67.86	32.88	34.98	51.55
77	Rochester.....	29.86	70.14	33.80	36.34	50.38
26	Medford.....	35.20	64.80	31.20	33.60	51.89
26	Medford.....	23.80	76.20	35.90	40.30	55.79
26	Medford.....	25.20	74.80	38.70	36.10	48.26
126	Madelia.....	28.18	71.82	33.58	38.24	53.23
26	Medford.....	33.50	66.50	33.30	33.20	49.96
26	Medford.....	32.80	67.20	32.20	35.00	52.08
110	Stanton.....	33.60	66.40	32.00	34.40	51.81
97	Biscay.....	29.50	70.50	37.10	33.40	47.36
97	Biscay.....	34.50	65.50	31.90	33.60	51.29
24	Becker.....	34.70	65.30	32.10	33.20	50.84
24	Becker.....	25.32	74.68	36.88	37.80	50.61
24	Becker.....	29.64	70.36	33.74	36.62	52.04
97	Biscay.....	30.72	69.28	35.08	34.20	49.36
126	Madelia.....	26.50	73.50	34.70	38.80	52.78
126	Madelia.....	28.70	71.30	33.10	38.20	53.57
126	Madelia.....	27.40	72.60	35.00	37.60	51.79
120	Alcoma.....	30.40	69.60	35.60	34.00	48.85
126	Madelia.....	25.60	74.40	36.40	38.00	51.07
97	Biscay.....	23.84	76.16	41.46	34.70	45.55
129	Howard Lake.....	27.34	72.66	38.26	34.40	45.95
*129	Howard Lake.....	22.74	77.26	49.60	27.66	35.80
129	Howard Lake.....	26.00	74.00	42.40	31.60	42.70
41	Havana.....	27.20	72.80	36.20	36.60	50.27
10	Huntley.....	36.44	63.56	32.60	30.96	48.71
16	Heidelberg.....	33.94	66.06	32.70	33.34	50.48
21	Lansing.....	30.20	69.80	34.50	35.30	50.57
20	Turtle Creek.....	30.15	69.85	35.60	34.25	49.02
27	Waltham.....	33.88	66.12	33.40	32.72	49.49
21	Lansing.....	28.32	71.62	36.00	35.62	49.79
20	Turtle Creek.....	26.34	73.66	36.26	37.40	50.77
120	Acoma.....	28.58	71.42	33.94	37.48	52.48
16	Heidelberg.....	33.22	66.78	32.30	34.48	51.63
133	Union Hill.....	26.08	73.92	35.42	38.50	52.08
120	Acoma.....	30.76	69.24	33.00	36.24	52.34
133	Union Hill.....	27.84	72.16	35.74	36.42	50.47
....	New Prague.....	30.64	69.36	35.64	33.72	48.62
125	Alma City.....	30.10	69.90	34.40	35.50	50.79
26	Medford.....	32.66	67.34	33.80	34.54	51.29
26	Medford.....	24.80	75.20	38.10	37.10	49.34
121	Menton.....	30.30	69.70	36.70	33.00	47.34

\*Below standard.

## RESULTS OF ANALYSES OF MINNESOTA FULL CREAM CHEESE, 1891-92.—

*Continued.*

Factory No.	LOCATION OF FACTORY.	Percentage.				
		Water.	Total solids.	Caseine, etc.	Fats.	Fats to solids.
41	Havana.....	31.98	68.02	33.20	34.82	51.04
41	Havana.....	26.98	73.02	33.88	39.14	53.60
121	Owatonna.....	19.26	80.74	38.64	42.10	50.89
1	Fergus Falls.....	21.12	78.88	37.80	41.08	52.08
26	Medford.....	29.52	70.48	34.66	35.82	50.82
26	Medford.....	31.14	68.86	32.48	36.38	52.81
96	Hampton.....	29.48	70.52	32.66	37.86	53.68
26	Medford.....	22.50	77.50	39.00	38.50	49.68
121	Owatonna.....	34.66	65.34	32.10	33.24	50.87
....	.....	27.60	72.40	35.50	36.90	50.96
32	Santiago.....	18.34	81.66	44.50	37.16	45.50
41	Havana.....	19.28	80.72	46.34	34.38	42.62
32	Santiago.....	17.26	82.74	47.36	35.38	42.76
24	Becker County Coop.....	20.46	79.54	37.80	41.74	52.47
85	Sauk Centre.....	20.44	79.56	37.80	42.76	53.74
121	Newton.....	21.46	78.54	41.08	37.46	47.69
121	Newton.....	28.66	71.34	36.96	34.38	48.18
121	Newton.....	25.46	74.54	39.42	35.12	48.46
...	Bloomington Grove.....	23.08	76.92	41.70	35.22	45.79
110	Stanton.....	18.24	81.76	45.90	33.86	43.86
110	Stanton.....	19.70	80.30	45.50	34.80	43.33
....	Fergus Falls.....	33.40	66.60	34.80	31.80	47.73
....	Fergus Falls.....	29.40	70.60	36.00	34.60	49.00
61	London.....	20.96	79.04	43.10	35.94	45.47
61	London.....	33.50	66.50	33.00	33.50	50.37
21	Lansing.....	28.52	71.48	34.16	37.32	52.21
20	Turtle Creek.....	35.58	64.42	32.70	31.72	49.23
33	New Richland.....	20.82	79.18	40.64	38.54	48.67
34	Spring Valley.....	25.60	74.40	38.40	36.00	48.38
18	Rock Dell.....	22.22	77.78	38.76	39.02	50.17
20	Turtle Creek.....	34.36	65.64	32.64	33.00	50.27
42	Oakland.....	34.58	65.42	35.30	30.12	46.41
20	Turtle Creek.....	32.18	67.82	35.10	32.72	48.24
131	Elgin.....	29.50	71.50	37.50	34.00	47.55
4	Pine Island.....	24.54	75.46	38.30	37.16	49.24
120	Acoma.....	30.58	69.42	34.40	35.02	50.44
26	Medford.....	29.80	70.20	35.40	34.80	49.57
121	Menton.....	32.70	67.30	33.30	34.00	50.52
95	New Trier.....	32.68	67.32	33.00	34.32	50.98
33	New Richland.....	23.96	76.04	39.10	36.94	48.54
33	New Richland.....	24.92	75.08	38.40	36.68	48.85
33	New Richland.....	23.88	76.12	38.40	37.72	48.24
138	Lansing, brick cheese.....	32.80	67.20	33.60	33.60	50.00
112	Redwood Falls.....	27.92	72.08	35.74	36.34	50.42
121	Merton.....	30.50	69.50	30.90	38.60	55.53
95	New Trier.....	32.30	67.70	32.60	35.10	51.84
120	Acoma.....	29.56	70.44	34.50	35.94	51.02
42	Oakland.....	31.26	68.74	36.40	32.34	47.04
26	Medford.....	26.70	73.30	39.40	33.90	46.25
120	Acoma.....	30.70	69.30	31.98	37.32	53.85
97	Biscay.....	32.10	67.90	31.96	35.94	52.93
94	Spring Hill.....	30.72	69.28	32.90	36.38	52.50
120	Acoma.....	29.26	70.74	36.36	34.38	48.60
97	Biscay.....	18.72	81.28	39.70	41.58	51.15
1	Fergus Falls.....	19.14	80.86	38.80	42.06	52.04

## RESULTS OF ANALYSES OF MINNESOTA FULL CREAM CHEESE, 1891-92.—

*Continued.*

Fac- tory No.	LOCATION OF FACTORY.	Percentage.				
		Water.	Total solids.	Cas- eine, etc.	Fats.	Fats to solids.
121	Owatonna.....	24.00	76.00	39.70	36.30	47.76
26	Medford.....	22.65	77.37	38.06	39.30	50.81
47	Frazee City.....	27.10	72.90	35.70	37.20	51.03
48	Audubon.....	16.60	83.40	37.30	46.10	55.31
48	Audubon.....	24.96	75.04	35.50	39.54	52.56
47	Frazee City.....	34.00	66.00	32.40	33.60	50.91
48	Audubon.....	23.00	77.00	39.86	37.14	48.23
96	Hampton.....	18.40	81.60	44.80	36.80	45.09
20	Turtle Creek.....	24.20	75.80	44.00	31.80	41.98
123	Willmar.....	29.60	70.40	34.96	35.44	50.76
*135	Milan.....	40.68	59.32	36.80	22.52	37.96
129	Howard Lake.....	28.54	71.46	40.00	31.46	44.02
119	Raymond.....	33.78	66.22	33.64	32.58	49.20
61	Larden.....	19.46	80.54	45.70	34.84	43.25
20	Turtle Creek.....	20.46	79.54	47.66	31.88	40.08
42	Oakland.....	30.18	69.82	35.20	33.62	48.15
20	Turtle Creek.....	31.86	68.14	37.24	30.90	45.34
20	Turtle Creek.....	25.16	74.86	43.00	31.86	40.95
14	0Eagle Lake.....	25.06	74.94	37.64	37.30	49.77
14	0Eagle Lake.....	31.76	68.24	33.70	34.54	50.61
112	No Redwood Falls.....	35.44	64.56	32.06	32.50	50.34
97	Biscay.....	29.98	70.02	36.30	33.72	48.15
93	Owatonna.....	35.12	64.88	32.70	32.18	49.77
18	Rock Dell.....	32.58	67.42	34.84	32.58	48.32
42	Oakland.....	29.82	70.18	34.60	35.58	50.68
27	Waltham.....	32.50	67.50	34.40	33.10	49.03
27	Waltham.....	33.84	66.16	35.86	30.30	45.89
136	Gaylord.....	25.00	75.00	38.00	37.00	49.33
137	Minneota.....	29.52	70.48	35.20	35.28	50.05
137	Minneota.....	28.82	71.18	35.00	36.18	50.82
119	Raymond.....	32.68	67.32	38.90	28.42	42.21
41	Havana.....	30.86	69.14	32.10	37.04	53.57
41	Havana.....	26.62	73.38	36.20	37.18	50.66
44	Lake Crystal.....	26.66	73.34	34.60	38.64	52.73
26	Medford.....	27.18	72.82	34.86	37.96	52.13
97	Biscay.....	31.70	68.30	33.30	35.00	51.24
21	Merton.....	27.46	72.54	37.94	34.60	47.69
121	Merton.....	22.16	77.84	38.30	39.54	50.75
121	Merton.....	29.34	70.66	35.08	35.58	50.35
112	Redwood Falls.....	34.00	66.00	32.60	33.40	50.60
112	Redwood Falls.....	29.50	70.50	33.36	37.14	52.68
112	Redwood Falls.....	33.82	66.18	32.30	33.88	51.19
112	Redwood Falls.....	34.48	65.52	32.30	33.22	50.72
112	Redwood Falls.....	24.28	75.72	37.60	38.12	50.34
41	.....	33.04	66.96	33.96	30.00	44.81
112	Redwood Falls.....	34.46	65.54	32.40	33.14	50.56
121	Merton.....	30.20	69.80	34.50	35.30	50.57
26	Medford.....	29.92	70.08	34.90	35.18	50.19
26	Medford.....	24.80	75.20	40.00	35.20	46.81
44	Lake Crystal.....	28.90	71.10	35.10	36.00	50.63
136	Gaylord.....	28.08	71.92	36.72	34.70	48.58
16	Heidelberg.....	27.64	72.36	35.30	37.06	51.21
16	Heidelberg.....	34.36	65.64	33.90	31.74	48.39
16	Heidelberg.....	34.20	65.80	32.40	33.40	50.79

\*Below standard.



RESULTS OF ANALYSES OF MINNESOTA FULL CREAM CHEESE, 1891-92.—  
*Continued.*

Factory No.	LOCATION OF FACTORY.	Percentage.				
		Water.	Total solid s.	Cas-eine, etc.	Fats.	Fats to solid s.
120	Acoma.....	25.38	74.62	39.80	35.52	47.60
116	Gaylord.....	31.66	68.34	34.60	33.74	49.50
121	Merton.....	32.56	67.44	33.42	34.02	51.49
121	Merton.....	26.48	73.52	39.28	34.24	46.57
44	Lake Crystal.....	31.00	69.00	34.10	34.90	50.58
1	Fergus Falls.....	27.70	72.30	33.80	38.50	53.25
26	Medford.....	30.48	69.52	34.76	34.76	50.00
97	Biscay.....	27.88	72.12	39.40	32.72	45.37
133	Vernon Center.....	28.04	74.96	34.82	40.14	53.55
133	Vernon Center.....	24.20	75.80	35.00	40.80	53.82
93	Owatonna.....	27.00	73.00	36.18	36.82	50.43
26	Medford.....	32.30	67.70	34.00	33.70	49.77
136	Gaylord.....	26.60	73.40	36.80	36.60	49.73
129	Howard Lake.....	26.00	74.00	42.40	31.60	42.70
41	Havana.....	27.20	72.80	36.20	36.60	50.27
18	Rock Dell.....	23.56	76.44	37.94	38.50	51.56
18	Rock Dell.....	29.20	70.80	34.90	35.90	50.70
....	.....	20.06	79.94	41.40	38.54	48.21
20	Turtle Creek.....	28.64	71.36	37.96	33.40	46.79
41	Havana.....	23.44	76.56	38.00	38.56	50.37
....	Havana.....	26.20	73.80	36.80	37.00	50.13
	Average.....	28.37	71.63	36.06	35.57	49.66

\*Not included in average: Below standard.

Of this series of 207 samples of Minnesota Factory cheese, representing the product of 53 different factories, there are 123 samples which contain 50 per cent. or above of fats to solids; 191 samples which contain more than 45 per cent., 204 samples which contain more than 40 per cent., and only 3 which are below the legal standard of 40 per cent. As is seen by reference to the table the average of the 204 legal samples is 49.66 per cent. of fats to solids.

Through the courtesy of Mr. E. F. Batten, the assistant superintendent of the dairy exhibit at the state fair, in 1890, the writer was enabled to secure samples for analysis of the full cream cheese exhibited there. The dairy exhibit as a whole, was an exceedingly creditable one, and as will be seen by reference to the accompanying table of analyses, the quality as regards richness of the samples is excellent.

Results of analyses of Minnesota Full Cream Cheese exhibited at State Fair, 1890.

No. of factory.	Location of Factory	Month made.	PERCENTAGE.					Color.
			Water.	Total solids.	Caseine, etc.	Fats.	Fats to solids.	
96	*Hampton.....	July	33.98	66.02	29.90	36.12	54.71	Moderate.
96	*Hampton.....	Aug	33.84	66.14	30.30	35.84	54.19	Moderate.
97	†Biscay .....	July	36.66	63.34	30.20	33.14	52.20	Light.
120	†Acoma.....	July	30.50	69.50	30.90	38.60	55.53	Light.
118	Sumpter.....	July	29.84	70.16	33.20	36.96	52.67	Moderate.
129	Howard Lake...	July	30.12	69.88	33.70	36.18	51.77	Light.
117	Janesville.....	July	32.00	68.00	31.50	36.50	53.68	Light.
109	Austin.....	July	30.10	69.90	35.64	34.26	49.01	Light.
110	Stanton.....	Aug	32.30	67.70	32.60	35.10	51.84	Moderate.
121	Owatonna.....	July	32.06	67.94	31.14	36.80	54.16	Light.
95	New Trier.....	July	39.04	60.96	29.60	31.36	51.26	High.
83	Cannon City....	July	32.28	67.72	34.20	33.52	48.02	Light.
93	Owatonna.....	July	32.80	67.20	33.60	33.60	50.00	Light.
95	‡New Trier.....	July	37.56	62.44	28.86	33.58	53.77	Light.
110	§Stanton.....	July	34.34	65.66	30.38	35.28	53.70	High.
97	Biscay.....	July	36.20	63.80	31.40	32.40	50.78	Moderate.
93	Owatonna.....	.....	37.56	62.44	33.40	29.04	46.50	Light.
	Average.....	—	33.53	66.47	31.79	34.68	52.17	

\*First premium on full cream cheese.

†Second premium on full cream cheese.

‡Third premium on full cream cheese.

§First premium on Young America cheese.

||Second premium on Young America cheese.

||Sage cheese.

Of the series of seventeen samples of factory cheese 15 contain of fats to solids 50 per cent. or above, and all contain over 45 per cent.

Results of analyses of dairy cheese exhibited at the Minnesota State Fair, 1890.

BY WHOM MADE.	PERCENTAGES.				
	Water.	Total solids.	Caseine etc.	Fats.	Fats to solids.
*Mrs. Lizzie Leavitt, Waseca...	42.16	57.84	30.60	27.24	47.09
†A. F. Jones, Morristown.....	34.56	65.44	32.30	33.14	50.64
‡Mrs. Northrup, Red Wing....	40.56	59.44	30.10	29.34	49.36
F. D. Holmes, Owatonna.....	37.82	62.18	30.90	31.28	50.30
Average.....	38.77	61.23	30.97	30.26	49.35

\*First premium on dairy cheese and sweepstakes prize—†Second premium on dairy cheese, representing dairy of H. M. Mattison, Morristown--‡Third premium on dairy cheese.

Of this series of four samples of dairy cheese, two contain of fats to solids 50 per cent. or more, while the entire list contains considerable more than 45 per cent.

By favor of the management of the Southern Minnesota Fair there were obtained by Mr. A. H. Bertram, Secretary, samples of certain lots of the full cream cheese exhibited there. The analyses of these are contained in the following table.

Results of analyses of Minnesota full cream cheese exhibited at Southern Minnesota fair, Rochester, 1890.

No. of factory.	Location of factory.	PERCENTAGES.				
		Water.	Total solids.	Caseine etc.	Fats.	Fats to solids.
3	*Byron.....	32.30	67.70	34.70	33.00	48.74
.....	†Salem.....	34.04	65.96	32.30	33.66	51.03
18	Rock Dell.....	35.10	64.90	30.50	34.40	53.00
18	Rock Dell.....	34.50	65.50	31.40	34.10	52.06
4	Pine Island.....	33.32	66.68	32.34	34.34	51.50
2	Olmsted.....	32.14	67.86	35.54	32.34	47.63
	Average.....	33.56	66.44	32.79	33.65	50.66

\*First premium for full cream cheese. †Second premium for full cream cheese.

Of this series of six samples, four contain 50 per cent. or above of fats to solids, and the remainder are considerably above 45 per cent.

Results of analyses of Minnesota full cream cheese exhibited at Mower county January, 1891:

Factory No.	Location of factory.	PERCENTAGES.				
		Water.	Total solids.	Caseine, etc.	Fats.	Fats to solids.
138	.....	32.80	67.20	33.60	33.60	50.00
10	Huntley.....	36.44	63.56	32.60	30.96	48.71
16	Heidelberg.....	33.94	66.06	32.70	33.34	50.48
21	Lansing.....	30.20	69.80	34.50	35.30	50.57
20	Austin.....	30.15	69.85	35.60	34.25	49.02
6	Waltham.....	33.88	66.12	33.40	32.72	49.49
21	Lansing.....	28.32	71.62	36.00	35.62	49.79
20	Austin.....	26.34	73.65	36.26	37.40	50.77
	Average.....	31.52	68.48	34.33	34.15	49.85

Of this series of eight samples four contain not less than fifty per cent. of fats to solids and none less than forty-eight per cent.



AVERAGE COMPOSITION OF MINNESOTA FULL CREAM CHEESE ANALYZED.  
1889-1892.

Number of sam- ples analyzed.	Source and character.	PERCENTAGES.				
		Water.	Total solids.	Cas- eine, etc.	Fats.	Fats to solids.
38	From factories 1889.....	31.56	68.44	32.58	35.86	52.39
46	From factories 1890.....	31.69	68.31	33.06	35.25	51.63
17	State fair, 1890 (factory).....	33.53	66.47	31.79	34.68	52.17
4	State fair, 1890 (dairy).....	38.77	61.23	30.97	30.26	49.35
6	Rochester fair, 1890.....	33.56	66.44	32.79	33.65	50.66
73	Purchased on market, 1889-90.....	29.59	70.41	35.01	35.40	50.14
17	Purchased on market, 1888.....	29.27	70.73	36.11	34.55	48.33
8	Mower county fair, 1891.....	31.52	68.48	34.33	34.15	49.85
204	Purchased on market, 1891-92.....	28.37	71.63	36.06	35.57	49.66
413	General average.....	29.97	70.03	34.74	35.29	50.39

Of the entire series of 413 samples 263 contain of fats to total solids 50 per cent. or above; 372 more than 45 per cent. and the entire list more than 40 per cent.

In order to thoroughly understand the significance of these results as regards the full cream cheese made in the State of Minnesota, it is desirable that they be considered and compared with the results of similar investigations made elsewhere.

The only extensive series of analyses of American factory cheese with which I am able to compare the analyses just reported is one collated and reported by Dr. R. D. Clark (third annual report New York state dairy commissioner.)

This author says: "In our table containing the analyses of seventy-nine samples of American alleged full cream cheese will be seen a wide range of variation in each constituent. The variation is largely due to water, which is an unstable ingredient, as it evaporates more or less, according to circumstances. This obstacle to arriving at a standard is removed by calculating the proportion of fat to the total solids; as it is technically called, "calculating on a dry basis.

"This gives with the seventy-nine samples, an average of the total solids of 75.08 per cent; fats to solids, 43.20 per cent; and with the fifty-seven branded with the state brand, of the total solids, of 79.09 per cent.; fats to total solids, 42.59 per cent.

"But these averages of the fat are too high, both for the branded and non-branded cheese, because in each list there are samples which show the amount of fat to be more than 50 per cent. of the total solids, which, to say the least, excites the suspicion that cream or strippings was added to the milk of which it was made. There are eight of these among the branded and six among the non-branded. Of the eight samples which bear the state brand, five were exhibited at the state fair held in 1886, and of the six which were not branded, one was so exhibited; of the others we have no history. There are also other samples in each table, the fat of which nearly reaches this point. Eliminating these samples in which the proportion of fat to the total solids is 50 per cent. or more from the calculation, the average of the sixty-five remaining full cream cheese is: Water, 27.39 per cent.; fat, 29.75 per cent.; curd, 38.59 per cent.; ash, 4.25 per cent.; total solids, 72.63 per cent.; fats to total solids, 41.7 per cent.

"The average of the remaining forty-nine branded samples is: Water 27.67 per cent.; fat, 27.44 per cent.; curd, 38.63 per cent.; ash, 4.23 per cent.; total solids, 72.34 per cent.; fat to total solids, 40.97 per cent.; and which is probably the most correct average that can be obtained by this method of calculation."

In view of the fact that such results are shown of the full cream cheese of our own market as have been reported, I seriously question the correctness of the assumption, as made by Dr. Clark, that a cheese which shows upon analysis a proportion of fats to solids of 50 per cent. or above, is necessarily made from other than whole milk, since if we admit the same as correct we must assume that fully two-thirds of the full cream cheese of our market is made either from strippings or with the addition of cream; which naturally is not the case. Such an opinion might have been justified with reference to the samples reported upon by Dr. Clark, since many were probably prepared for exhibition at fairs, etc., but with a large share of those reported by the writer the samples were the ordinary output of the factories or were bought in the open market in various portions of the State, and, as remarked by Dr. Clark with reference to samples obtained by the latter method, are more likely to show an average which is below than above the correct one.

In conclusion; it appears to be shown that so far as evidence is attainable upon the question, it is proven beyond a doubt that the legal standard of richness of full cream cheese, viz: 40 per cent of fats to total solids is really much lower than is necessary to include all of the full cream cheese of the market, and that the probabilities are that the standard could be raised to 45 per cent. without doing injustice to anyone.

It also appears that despite the conceded fine character and quality of the full cream cheese of the state of New York, that, as analyzed and reported upon by the chemist of the New York State Dairy Commission (who reports 57 samples bearing the state brand as showing a proportion of fats to solids of 42.59 per cent.), the full cream cheese of this State is considerably richer in fats, since the average of 413 samples shows the fats to solids to be 50.39 per cent.

This exceeding richness is of very considerable importance to the dairy-men of Minnesota, and they can rest assured that if similar conditions are maintained in the future, and a knowledge of their existence is afforded to the mercantile public, that as they may become generally known and appreciated, a more ready market will be found for the cheese which we produce, and the dairy interests of the State thus be materially advanced.

#### ADULTERATION OF CHEESE.

There is a long list of substances given by various authorities as adulterants of cheese, but few if any of them are made use of at present. The principal adulterants which are found are coloring matters (if they can be regarded as adulterants), preservative agents, and the substitution of foreign fats for the natural fats of the milk.

#### COLORING MATTERS.

The only coloring matter which is in common use for cheese is annatto, and this is largely used in the inferior brands of skim cheese, since nearly all of the better full cream cheese are devoid of artificial coloring. The evident object of the addition is to give a supposed improved and richer appearance, although the natural color of most of the cream cheese

largely defeats this. There is nothing injurious about this coloring matter, and the only question relative to its employment must be as to whether it is added with intent to deceive the purchaser by giving the semblance of a better article than it really is.

#### PRESERVATIVE AGENTS.

In the manufacture of skim cheese, or as it is sometimes denominated, "anti-huff cheese," it is a common practice, in order to preserve them and especially to prevent them from puffing out or "huffing," as it is technically called, from the abnormal generation of gases in the interior before they become fully ripe, to employ so-called "anti-mottling" or "anti-huffing" extracts. These extracts are said to consist of caustic and carbonated alkali, saltpetre, and a little annatto dissolved in water. An analysis reported by Dr. Wiley and another by Mr. Munsell, confirms this statement of composition in certain cases. Another analysis of a similar preparation used in the West is reported by Dr. Wiley, who states that the substance is almost entirely composed of borax. My experience demonstrates the extensive use of similar preparations, since in thirty samples examined, borax or boracic acid was found to be present in twenty-three.

#### FOREIGN FATS.

The most common adulteration of cheese consists in the substitution of foreign fats for those naturally contained in the milk. The fat usually employed, is lard, and, less frequently, cotton seed oil and "oleo-oil" are used. This cheese is made in Wisconsin and Illinois, and probably in other localities. It is made under patented processes, letters patent having been issued to H. O. Freeman in 1873, and to Wm. Cooley in 1881. The process is described by Caldwell (Second Annual Report. New York State Board of Health) as follows:

"In this process an emulsion of lard is made by bringing together in a 'disintegrator' lard and skimmed milk, both previously heated to 140° Fahrenheit in steam jacketed tanks. The 'disintegrator' consists of a cylinder revolving within a cylindrical shell. The surface of the cylinder is covered with fine serrated projections, each one of which is a tooth with a sharp point. As this cylinder revolves rapidly within its shell, the mixture of melted lard and hot skimmed milk is forced up in the narrow interspace and the lard becomes very finely divided and most intimately mixed or 'emulsionized' with the milk. This emulsion consists of from two to three parts of milk to one of lard. It can be made at one factory and taken to another to be used for cheese, but it is usually run at once into the cheese vat. In making the cheese a quantity of this emulsion containing about 80 pounds of lard is added to about 6,000 pounds of skimmed milk and about 600 pounds of buttermilk in the cheese vat, and the lard that does not remain incorporated with the milk or curd, usually about 10 pounds, is carefully skimmed off. These quantities of the materials yield 500 to 600 pounds of cheese, containing about 70 pounds of lard, or about 14 per cent. About half of the fat removed in the skimming of the milk is replaced by lard (Munsell). According to many witnesses the imitation is excellent, for experts have been unable to pick out lard cheese from a lot of these and full-cream cheese of good quality together, and it may therefore be safely presumed that the general public would be unable to distinguish one from the other."

An investigation of the character of the cheese of the local market with reference to its adulteration with foreign fats was begun in 1887, and has been continued until the present time. The results of such examinations may be stated to be as follows: In 1887 and 1888, of thirty-eight samples



examined sixteen were found to be adulterated with foreign fats. In 1889 and 1890, of eighty-four samples, six were found to be thus adulterated.

In 1891 and 1892, of fifty suspected samples which were examined, not one was found which contained such foreign fats.

#### REPORT UPON BAKING POWDERS.

Inquiries are so frequently made of the writer with reference to the character, composition and properties of the various baking powders upon the market that it is deemed advisable to reproduce to a considerable extent the information contained in previous reports, with the addition of such facts as have been developed by the more recent researches upon the subject.

In order that bread preparations may be light and spongy, and thus easy of digestion and agreeable to the taste, it is necessary that some means be provided by which the dough may be "raised." The typical method of effecting this is by means of yeast, which acts as a leavening agent by causing a portion of the starch of the flour to undergo a fermentative change, the result of which is the development of carbonic acid gas, which by reason of its specific lightness, leavens or raises the mass of dough. This method possesses the great advantages of introducing into the loaf no foreign material, and generating the gas slowly so that its full effect is produced in the lightening of the dough. On the other hand there is the disadvantage of the slowness of its action, which leads to the rejection of the method in many cases where quicker results are considered desirable.

In cases where rapid raising of the bread, for immediate baking is necessary, it is customary to employ chemical aerating agents instead of yeast. These invariably consist of an alkaline carbonate or bi-carbonate associated with some acidifying agent or agents, in such a manner that when the mass is moistened with water, carbonic acid gas is liberated and serves to leaven or raise the dough, and thus give to it a light and spongy character.

The origin of these preparations was undoubtedly the old-time operation of combining "saleratus" and "cream of tartar" in the household as a substitute for yeast, when quicker action was desired.

At the present time the use of these chemical aerating agents or "baking powders" is almost universal, and they are found upon the market in great variety.

All of them are mixtures of bi-carbonate of soda, with some acidifying agent or agents, and it is upon the nature of the latter that their distinctive character mainly depends. All are likewise diluted to some extent with starch or flour, which serves to prevent the agents from acting upon one another while contained within the package, thus impairing their quality.

There is a prevalent belief created by the erroneous statements of manufacturers, that the salts from which carbonic acid gas is generated, pass off in the form of escaping gases, scarcely leaving a trace in the bread. This is not true of any baking powder whatever. The resultant salts formed by the chemical action which takes place in the dough, remain in the bread, and nothing other than the carbonic acid gas and the water, ordinarily escape during the baking. The saline constituents which are thus formed differ materially in character and in amount with different

classes of powders, and such being the case, no baking power should be given a place in any household unless it is an established fact that the products of its decomposition are of such a character as to admit of continuous ingestion without liability of producing interference with health.

#### CLASSIFICATION OF BAKING POWDERS.

Baking powders may be conveniently classified according to the nature of the acid constituent which they contain. There are three principal varieties, as follows:

1. Tartrate powders, in which the acidifying agent is tartaric acid in some form.
2. Phosphate powders, in which the acid constituent is phosphoric acid.
3. Alum powders, in which the acid constituent is the sulphuric acid contained in some form of alum.

There are powders which are mixtures of two or more of these classes, and others which, while they belong to one of these classes, contain other constituents which will require a separate study under a proper heading.

#### TARTRATE POWDERS.

Among the tartrate powders of the market are the following classes:

1. Tartaric acid powders.
2. Cream of tartar powders.
3. Cream of tartar powders containing free tartaric acid.
4. Cream of tartar powders containing ammonia compounds.

#### PROPERTIES OF TARTRATE POWDERS.

Cream of tartar, or bitartrate of potassium, is a natural constituent of the juices of many fruits, and notably of those of the different varieties of the grape. During the fermentation of grape juice in the process of its conversion into wine, the cream of tartar, by reason of its insolubility in the alcohol which is formed, separates in the form of a crystalline deposit known as argol. This deposit is collected and purified, and forms the cream of tartar of commerce. This substance is acid in its reaction, containing one atom of replaceable hydrogen, and hence is capable of reacting with an alkaline carbonate or bicarbonate with the evolution of carbonic acid gas.

Tartaric acid itself is obtained from cream of tartar, and is more strongly acid, but considerably more expensive.

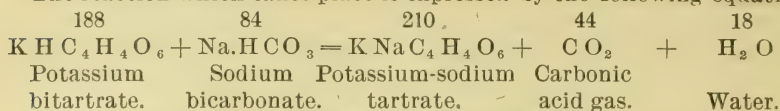
#### TARTARIC ACID POWDERS.

These are rarely found upon the market, the reason probably being that while the combination might be a satisfactory one theoretically, in that it left a smaller quantity of residue than some others, and that this residue was of such a character as to render its ingestion harmless, that practically there were objections to its use. These would be principally that such powders are apt to rapidly deteriorate on keeping, even in ordinarily tight cans, thus rendering them of changeable and uncertain value to the consumer. Also that when moistened preparatory to using, owing to the ready solubility of the acid, the disengagement of the gas would be so rapid as to interfere materially with the results.

#### CREAM OF TARTAR POWDERS.

These are mixtures of acid potassium tartrate and sodium bicarbonate in proper proportions, and are almost invariably mixed with flour or starch to the extent of 10 to 20 per cent. for the purpose of retarding or preventing deterioration on keeping.

The reaction which takes place is expressed by the following equation



It will be seen that the products of the reaction are carbonic acid and the double tartrate of potassium and sodium, the latter constituting the residue which remains in the bread. This substance is commonly known as Rochelle salt and is the essential component of seidlitz powders, which are often taken as a mild form of medicine. The most exaggerated statements have appeared in the newspapers from time to time with reference to the physiological action of this salt, which is in reality a very mild medicinal agent, in fact one of the mildest of the alkaline salts. Stille & Maisch (National Dispensatory) say: "In doses of one-half ounce to one ounce (240 to 480 grains) it acts as a gentle and cooling laxative and seldom disagrees with the stomach." The U. S. Dispensatory says: "Given in small and repeated doses it does not purge, but is absorbed and renders the urine alkaline." As a purgative the dose is one ounce.

In order to decompose 40 grains of bicarbonate of soda there is required 89.5 grains of cream of tartar. After the carbonic acid gas has been expelled, there remains in the bread 100 grains of the tartrate of potassium and sodium. According to Prof. Cornwall: "In consuming the equivalent of half a loaf of our bread, one would take fifty grains of Rochelle salt." This estimate is somewhat below that of Dr. Crampton, who says upon this point: "The directions that accompany these powders generally give two teaspoonfuls as the proper amount to use to the quart of flour; probably more is generally used. This would be at least 200 grains; deducting 20 per cent. for the starch filling we have 160 grains of the mixed bitartrate and bicarbonate, and this would form 165 grains of crystallized Rochelle salt in the loaf of bread made from the quart of flour. The popular idea is that the chemicals used in a baking powder mostly disappear in baking, and that the residue left is very slight. I doubt if many persons understand that when they use tartrate powders, which are considered to be the best class, or at least one of the best classes of such powders, they introduce into the breadstuff very nearly an equal weight of the active ingredient of seidlitz powder, and in a loaf of bread made from it they consume more than the equivalent of one such powder." Dr. Crampton further says: "The character of this residue is probably the least objectionable of any of those left by baking powder." \* \* \* Dr. W. K. Newton (report state dairy commissioner of New Jersey, 1888), says, relative to the residue left by tartrate powders: "The quantity in an ordinary loaf made with two teaspoonfuls of the powder amounts to about 100 grains of which a person would take less than fifty grains in his portion of the bread. This amount is not only harmless, but is positively innocent, and was always so considered until baking powder literature endeavored to create a doubt concerning this residue."

It has been maintained vigorously by interested parties that the cream of tartar of the market was excessively impure and that only certain of the cream of tartar powders were made from an article which was pure, the others being adulterated with compounds of lime, etc., which existed as impurities in the cream of tartar. Upon this point it can be said that



calcium tartrate is a natural impurity of cream of tartar, since it is also a constituent of fruit juices. It is possessed of essentially the same degree of solubility in water, hence is separated from the cream of tartar with a considerable degree of difficulty. The presence of calcium tartrate is recognized by the U. S. Pharmacopeia, which allows the employment of cream of tartar for medicinal uses provided this impurity is present in a proportion not greater than six per cent. As a matter of fact the cream of tartar of the wholesale market is very nearly absolutely pure, generally showing a percentage of purity of not less than 98 or 99 per cent., and the assertion that any of the leading brands of tartrate powders are superior to others by reason of the fact that they are made from a more highly refined article is not borne out by investigation, and I should not hesitate to consider that, so far as the purity of the cream of tartar was concerned, all the leading brands were entirely satisfactory.

#### CREAM OF TARTAR POWDERS CONTAINING FREE TARTARIC ACID.

Physiologically there is no objection to this form of powder, since it is practically the same as the one just discussed. The proportion of free tartaric acid contained in these powders is small, and hence their character is not greatly affected by the addition. The reasons for the addition of tartaric acid are usually two-fold, viz: To allow the increase of the bicarbonate and thus add to the amount of gas which will be given off, and increase the efficiency of the powder, and also to insure a more rapid evolution of a portion of the gas by reason of the greater solubility of the tartaric acid.

The only objection to the combination arises from the fact that deterioration in such a powder is likely to be more rapid than otherwise: that within a comparatively short time the tartaric acid and a portion of the sodium bicarbonate react upon one another, and thus reduce the strength of the powder to some extent. It is not uncommon to find in examining these powders that within a short time they cease to react for free tartaric acid by reason of this change, and that hence there is a failure in attaining either of the objects sought.

#### CREAM OF TARTAR POWDERS CONTAINING AMMONIUM COMPOUNDS.

The ammonium compounds which are used in baking powders are the sesqui carbonate and the bitartrate. The former is ordinarily employed for the reason that it is very volatile and hence increases the leavening power of the powder. The latter is added for the purpose of retarding as far as possible the evolution of a portion of the carbonic acid gas, which it does by means of its difficult solubility in water.

There is a large amount of recorded evidence in favor of the use of carbonate of ammonia as a leavening or vesiculating agent in bakery. It is warmly commended by many and is without a doubt widely employed. That it is effective there can be no doubt. The entire question, in my opinion, hinges upon the point whether, as ordinarily employed, the substance is entirely dissipated, or whether a portion more or less great remains behind in the bread. It is generally stated by its advocates that it is entirely vaporized and that the resultant loaf is entirely free from its presence. Such statements do not seem to be invariably borne out by the facts, since food baked with it gives reactions for ammonia and sometimes both smells and tastes of it strongly. Speaking of this agent, Prof. H. B. Cornwall (Report of State Dairy Commissioner of N. J., 1888) says: "Car-

bonate of ammonia used in small quantities, is perhaps unobjectionable, but probably if any considerable quantity were employed, disagreeable physiological effects might be expected, irrespective of the unpleasant odor and taste that the ammonia compounds would impart to the bread which always shows ammonia reaction, even when small quantities only were used in making it."

An extended investigation made by the writer tends to show that the views expressed by Prof. Cornwall are correct, namely, that even when bread is made with such baking powders as are known to contain but very small proportions of ammonia compounds, ammonia can still be found in the loaf when baked, its vaporization by the heat probably being prevented by its forming a combination with the gluten of the flour. It has been seriously asserted by some chemists that there were certain advantages attaching to the presence of the carbonate of ammonia which seems to inevitably remain behind in the loaf after baking, namely that by reason of its alkaline property it effects the neutralization of the lactic and other acids produced as results of fermentation and thus improves the character of the product. To one who is familiar with the fact that all well made baking powders contain a slight excess of the bicarbonate of soda for the purpose of neutralizing the acid products of fermentation, the idea that carbonate of ammonia is either a necessary or valuable addition for such a purpose is extremely absurd.

The ammonia salts in general appear to be much more irritating and stimulating than the corresponding soda, or even potash salts. Stille and Maisch (National Dispensary) say of carbonate of ammonia: "It is irritant, and if long continued, even in doses which the stomach will tolerate, it impairs nutrition." It is a very powerful medicinal agent and is ordinarily employed in doses of from two to ten grains.

In the proportion that ammonia compounds exist in the ordinary cream of tartar powders it is impossible to prove them to be the source of serious bodily harm. At the same time there is a well founded opinion that ammonia compounds are not proper substances to be habitually taken with our foods; that their continued ingestion cannot be productive of good, and may be of harm, and hence they should be excluded from the dietary. Since equally efficient powders can be prepared without them from ingredients about which there cannot be the least question, the necessity for the addition of these possibly harmful substances is difficult to understand and appreciate.

#### PHOSPHATE POWDERS.

The compound of phosphoric acid which is principally used in powders of this class is the acid phosphate of lime or as it is sometimes called superphosphate of lime. It is prepared upon a large scale by the treatment of ground and burned bones with sulphuric acid, separating the soluble acid phosphate from the insoluble sulphate of lime and evaporating the solution to dryness, often with the addition of starch. When the acid phosphate acts on bicarbonate of soda there is formed phosphate of soda, and a calcium phosphate which, while it is insoluble in water, is to a certain extent soluble in the digestive fluids. This substance is a natural and essential constituent of the tissues of the body and is not at all likely to prove harmful as it is ordinarily used.

There is nothing to be urged against the use of the phosphate powders, so far as their influence upon health is concerned, provided they are properly made from pure ingredients, and have not deteriorated sufficiently to seriously impair their efficiency. Acid phosphate of calcium is however, manufactured commercially upon a large scale and is not always entirely free from the accompanying calcium sulphate (terra alba). If this substance, which is practically insoluble, is contained in these powders to any considerable extent, it will be likely to exercise the same deleterious effects that are attributable to it elsewhere.

The acid calcium phosphate is extremely hygroscopic. i. e. likely to absorb moisture from the air. Hence it is desirable and necessary that these powders be kept in securely sealed vessels, and be used as rapidly as possible after being opened lest they lose their efficiency through reaction between the constituents and consequent escape of the gas. In some instances this is guarded against by putting the constituents up in two separate packages, the contents of each of which are to be mixed in specified proportions when required. This entirely avoids the deterioration of the powder but opens the way to the employment of an excess of one or the other constituent by carelessness in measurement.

In general the phosphate powders are satisfactory in character and efficiency so long as they are thoroughly sealed from the air, but undergo a very rapid loss of gas when the vessel is opened and exposed to the air, and hence require care in handling if they are to be kept for any length of time in a condition suitable for use.

#### ALUM BAKING POWDERS.

The alum baking powders of the market are mixtures of sodium bicarbonate dried ammonia, alum and flour or starch. Their cost is very much less than that of cream of tartar or phosphate powder, and since they afford greater profit to the manufacturer and seller, they are pushed into prominence in every conceivable way.

When employed in baking, the products of their reaction are, carbonic acid gas, hydrate of aluminum, sulphate of sodium and sulphate of ammonium, although it is probable that a portion of the hydrate of aluminum reacts upon the phosphates of the flour and thus forms some aluminum phosphate as well.

To decompose 40 grains of bicarbonate of soda requires 38.1 grains of burnt ammonia alum. The residue contains very nearly the equivalent of 8 grains of dry (anhydrous) alumina, which is equal to nearly 72 grains of crystallized ammonia-alum.

The advocates of alum powders point to the fact that cream of tartar baking powders leave nearly twice as much residual matter in the loaf as a pure alum baking powder of the same strength. But as has been pointed out by Prof. Cornwall (Report of Dairy Commissioner of New Jersey, 1888) "the properties of these residues are different. Sulphate of soda is a more active salt than Rochelle salt, although probably there is little to choose between the two kinds of baking powder, so far as these two constituents of the residue are concerned. It is possible, however, that too little attention has been paid to the presence of ammonium salts in the residues of ammonia alum powders. Mr. Petraeus (Pharmaceutical Record, June 1, 1888) asserts that the action of sulphate of soda and sulphate of ammonium is rather milder than that of tartrate of soda and potash. As



regards the sulphate of soda, the authorities to which we have access do not confirm the statement; while as to sulphate of ammonia, we can find no special statement, because it is not used as a medicine.

We do know, however, that the ammonia salts in general are much more irritating and stimulating in their action than the corresponding soda-salts, or even than the potash salts. For instance, Stille and Maisch, speaking of ammonium bromide, state that it has a more acrid taste and is more irritating than potassium bromide. Its unpleasant taste and irritating qualities render it less convenient for administration than the bromide of potassium.

We all know how mild a substance is chloride of sodium (common salt); but of ammonium chloride Stille and Maisch write: "The direct effects of doses of 5 to 20 grains of this salt, repeated at intervals of several hours, are a sense of oppression, warmth and uneasiness in the stomach and some fullness in the head. If it is used for many days together in full doses, it disturbs the digestion, coats the tongue and impairs the appetite." We have already seen how active a drug carbonate of ammonia is, and while in the absence of proof, it would be rash to assert that sulphate of ammonia in five-grain doses is certainly injurious, yet there is abundant ground for further investigating its effect before asserting that it is milder in its effect than Rochelle salt." It is quite probable that the question of the presence of ammonium salts in any considerable quantities in the residues left by baking powders is deserving of more attention than it has thus far received. It is a fact that comparatively little recorded experience is to be found relative to the continued or habitual use of ammonium compounds. It is equally a fact that what there is, is not in their favor. The physiological action of the ammonium compounds is markedly different from those of sodium or potassium, in that the latter as a class tend to be eliminated in such form as to preserve the natural alkalinity of the secretions, while the former, probably in consequence of their well known instability, tend to undergo a process of oxidation of the ammonium radical to nitric acid, the result of which is an undue acidity of the secretions and a tendency toward perverted physiological functions.

The effects which are likely to follow the indigestion of the aluminum compounds contained in the residues will be discussed later in this report.

#### ALUM PHOSPHATE BAKING POWDERS.

Within the past few years the ordinary alum baking powders of the market have been largely displaced by the alum phosphate powder. This powder is a mixture of soda bicarbonate, dried ammonia alum, acid phosphate of calcium and flour of starch. It is thus seen that it differs from the alum powder, in that the acidifying agent is a mixture of alum and acid phosphate of lime.

The products of the reaction of these powders are aluminum phosphate, sulphate of lime, sulphate of ammonium, sulphate of soda, carbonic acid gas and water. The principal differences between the alum powder and the alum phosphate powder, are that the aluminum in the latter case is in the form of a phosphate instead of a hydrate, and that there is formed sulphate of lime in place of a part of the sulphate of soda. Otherwise the reactions are similar.

Various opinions relative to the merits of this particular combination have been expressed, thus: Dr. C. A. Crampton, (Report of Dept. of Agriculture, Bulletin No. 13, Part V.) says: "That form of alum powder

in which sufficient phosphate is added to combine with all the aluminum present, is a better form, and less apt to bring alum into the system than when alum alone is used."

Prof. Cornwall, (*loc. cit.*) says: "The addition of acid phosphate to alum powders can only be regarded as an improvement, provided the acid phosphate is free from sulphate of lime, lead or other objectionable substances, and the powders are put up in truly air-tight packages. Otherwise the deterioration consequent upon reaction between the bicarbonate of soda and the acid phosphate, leads to the use of larger quantities of the powder, and often with the result of introducing larger quantities of the alumina compounds into the bread."

A. McGill, (Bulletin No. 10, Lab'y Inland Revenue Dept., Canada,) says: "Alum phosphate powders constitute the great bulk of Canadian powders, and some are imported. There is, it seems to me, no *raison d'être* for this class of powders. They are evidently intended to appease the popular suspicion regarding alum powders, by the introduction of a phosphate. If, however, the phosphate of lime used in their preparation were a true superphosphate, no addition of alum would be needed to render the powder effective. In fact the addition of alum would, in that case, be great folly and waste, since the free phosphoric acid would combine with the alumina and form the inert phosphate of alumina. That sulphuric acid (in alum) and not phosphoric acid is the real agent in the liberation of gas in these powders is abundantly evident from the proportions in which phosphoric acid and alumina are present. \* \* \* Analyses show that alumina is invariably present in sufficiently large amounts to neutralize all the available phosphoric acid, even if the total amount present had existed as acid calcium phosphate, a supposition, however, which cannot reasonably be made. In no single instance, therefore, would phosphoric acid, even if present as acid phosphate of lime, be available for the decomposition of carbonate of soda. This decomposition is always effected just as in a *bona fide* alum powder, by the sulphuric acid of the sulphate of alumina, and the phosphoric acid is present merely as a blind."

In the opinion of the writer, the expressions of Dr. Crampton and Prof. Cornwall represent what are probably the facts in the case. It matters little whether the gas is liberated by the acid of the one or the other agent so long as it is liberated, and the residue left in as nearly an unobjectionable form as possible. That the phosphate of aluminum is less soluble than the hydrate is without doubt a fact, and hence there is less likelihood of its solution in the digestive fluids, while the properties of the other constituents of the residues cannot be said to differ materially in their effects.

#### THE ALUM QUESTION.

The literature upon the subject of the use of alum in baking powders, and upon the question of its injurious effect upon the health of those who consume the bread made from it, is already quite extensive. A very large share of the conclusions which have been drawn relative to the matter have been based upon purely theoretical grounds, and hence are of little value as compared with those based upon the results of careful physiological experiment. No attempt has been made to review in detail the work which has been done, but the conclusions which have been reached by the leading investigators will be presented.

The principal points of interest in the matter may be grouped as follows, and briefly examined:

1. The influence of aluminum compounds upon the economy.
2. The nature of the residues left by alum powders.
3. The condition as to hydration of these residues in the loaf.
4. The solubility of these residues in the digestive fluids.
5. The influence of residues upon digestion: *a.* Their action upon the fluids themselves. *b.* Their action upon the material to be digested.

1. **THE INFLUENCE OF ALUMINUM COMPOUNDS UPON THE ECONOMY.**—It is admitted by all that aluminum compounds are not natural or useful constituents of our bodies or our foods, and that certain of them, as the various alums, are when taken in considerable amounts, astringent, and irritating, produce emesis, sometimes cause symptoms of poisoning, and occasionally, though rarely, death. In small repeated doses these effects are not perceived, though the appetite and digestion are impaired and dyspepsia and constipation may be developed.

There is no evidence that the physiological effects of other aluminum compounds which are capable of being taken into solution in the body are markedly different in their effects upon digestion from the alums themselves.

2. **THE NATURE OF THE RESIDUES LEFT BY ALUM POWDERS.**—As already stated, these are either the hydrate with small amounts of the phosphate, or the phosphate of aluminum alone, according to the variety of powder employed.

3. **THE CONDITION AS TO HYDRATION OF THESE RESIDUES IN THE LOAF.**—It has, practically without exception, been maintained by the manufacturers of alum powders that the residues of hydrate and phosphate of aluminum were practically thoroughly dried during the baking process, and hence being dehydrated they were entirely insoluble, either in water or in the digestive fluids.

This position, however, is no longer tenable since Prof. Mallet (Chem. News, Dec. 7, 1888) has demonstrated by experiment that the temperature of the interior of the loaf during baking is not above 212° F., and that at that temperature absolutely no dehydration takes place.

4. **THE SOLUBILITY OF THESE RESIDUES IN THE DIGESTIVE FLUIDS.**—The solubility of these residues is an extremely important point, since were this admitted, the chief ground now occupied by the manufacturers of alum powders would be taken from them.

The evidence upon this point is conflicting; that of Mr. Sutton in the Norfolk Baking Powder case (Analyst Dec. '79), and of Prof. Patrick (Scientific Amer. Sup. No. 185), being the principal negative evidence which has been presented. The former experimented upon pigs, and the latter upon cats, and failed to find evidence of the solution and absorption of alumina compounds.

On the other hand L. Pitkin (Jour. Amer. Chem. Soc. IX, 27) in experimenting with gastric juice obtained from a dog, found a very considerable degree of solution. Dr. Mott (Jour. Amer. Chem. Soc. II, 1) fed freshly precipitated hydrate and phosphate of aluminum to dogs, and upon analysis of the tissues, large amounts of alumina were found.

Prof. Mallett (*loc. cit.*) using an artificial gastric juice found some solution to occur with the phosphate and considerably more with the hydrate.



5. THE INFLUENCE OF THESE RESIDUES UPON DIGESTION.—(*a.* Their action upon the digestive fluids.)—There is little evidence upon this point, although it is one which is well worthy of extended investigation, in view of the fact that aluminum compounds are able to enter into a loose combination with, and precipitate certain organic substances, as is the case in dying, when vegetable colors are fixed with aluminum mordants.

It seems probable, however, from the experiments of J. West Knights (Analyst, Vol. V.), Dr. Mott (*loc. cit.*), and Prof. Mallett (*loc. cit.*), that there is a tendency on the part of aluminum compounds to unite with the digestive ferments, and cause their precipitation, and consequently the serious impairment of the activity of the digestive fluids.

(*b.* Their action upon the material to be digested.)—The evidence upon this point has been collected by the investigators already quoted. It is difficult to entirely separate this effect from that just described, but there seems to be considerable evidence that either by impairment of the digestive fluids or by local action upon the material itself digestion is materially hindered, or even absolutely suspended in presence of these aluminum residues.

Experiments have been made with reference to fibrin, gluten, albumen, etc., and when carried out comparatively, great differences were invariably shown in the rapidity and completeness of the digestion.

The following are the summary of results, and the opinions of some of the leading chemists who have officially investigated this question:

Dr. Wm. K. Newton, commissioner of New Jersey (report for 1888), says: "This evidence is conclusive and certainly points to these facts: That alum residue does affect digestion, and that these residues are more or less soluble and are carried into the system. Hence it is suggested that if any person wishes to avoid a possible danger to health he should refuse to buy alum powders."

Professor H. B. Cornwall (*loc. cit.*) states: "In the writer's opinion, the presence of alum in baking powder is objectionable, since, under certain conditions, it may exert an injurious effect upon the digestion. The effects may not be very marked in the case of any individual consumer, but that they can be induced to a greater or less extent seems to be well established."

Dr. C. A. Crampton (*loc. cit.*) says: "From the various evidence which has been produced on both sides of the question, I think the following conclusions may be safely drawn:

1. That form of alum powder in which sufficient phosphate is added to combine with all aluminum present is a better form, and less apt to bring alum into the system than where alum alone is used.

2. It must be expected that small quantities at least of alum will be absorbed by the digestive fluids when any form of powder containing it is used.

3. Whether the absorption of small quantities of alum into the human system would be productive of serious effects is still an open question, and one that careful physiological experiment alone can decide."

Prof. J. W. Mallett, of the University of Virginia, (*loc. cit.*), concludes from an elaborate course of experiments: "From the general nature of the results obtained the conclusion may fairly be deduced that not only alum itself, but the residues which its use in baking powder leaves in

bread, cannot be viewed as harmless, but must be ranked as objectionable, and should be avoided when the object aimed at is the production of wholesome bread."

#### REPORT OF ANALYSES OF BAKING POWDERS.

All samples of baking powder which were found to be unlabeled and which were unfamiliar to the inspectors, were purchased and submitted for examination as to character. A total of 167 samples have been received and examined. Of these, 20 were cream of tartar or phosphate powders and 147 were either alum or alum and phosphate powders. Of those which contained alum 13 were labeled in accordance with the law and 134 were not.

A detailed list of all alum powders which have been examined by the department will be found in another portion of the report and hence is not reproduced here.

#### CONCLUSIONS.

In conclusion I desire to congratulate the people of the State of Minnesota upon the results which have been attained by the legislation which was enacted in 1889 with reference to the labeling of alum baking powders. Minnesota was the first of all the states to set the example, and indications point toward the adoption of similar restrictions in numerous other states in the near future. That the effect of the enforcement of the provisions of the law has been beneficial to the people of the State there can be no question. Since the passage of the law, the price of the cheap alum powders has been greatly reduced, and the actual saving of money to those who buy and use them has been very considerable. It is also generally conceded that their sale has been materially restricted.

That the requirements of the law are generally understood and observed by dealers in these goods is apparent when it is stated that of 725 lots of alum baking powders inspected in Minneapolis during the period covered by this report 643 were labeled as alum powders, and only 82 were without such label. Of these 31 lots were on sale in bulk and only 51 lots in cans.

The principal attempt at evading the law at the present time is by so placing the required label as to pass unnoticed, or by printing it in such a manner as to be nearly illegible. In the opinion of the writer this is a matter which is worthy of attention, and if necessary, of a remedy by a change in the law, which should prescribe with such definiteness the manner in which all packages in which alum powders are sold, shall be labeled as to preclude all possible evasions in the future.

#### REPORT UPON VINEGAR.

The principal varieties of vinegar which are found upon the market are Cider Vinegar, Colored Wine Vinegar and White Wine Vinegar.

#### CIDER VINEGAR.

Cider vinegar, as its name implies, is the product of the acetification of cider, which is known to all to be the fermented juice of the apple. When cider is exposed to the action of the air for a prolonged period in casks or barrels, or for a shorter period in generators filled with shavings, oxygen is absorbed, and the alcohol of the cider is converted into acetic acid. This is strictly a fermentative process, and the essential ferment in this case is the *mycoderma aceti* of Pasteur.

In theory, 100 parts of alcohol by weight produce 130 parts of absolute acetic acid; in practice, however, there is a loss of some 10 to 15 per cent. of the alcohol, and hence, an average cider containing five to six per cent. of alcohol by volume, or 4 to 4.8 per cent. by weight, will yield a vinegar containing from 4.5 to 5.5 per cent. of acetic acid.

The following are given as the characteristics of cider vinegar made from pure apple cider, of average quality, not less than two years old.

I. An acidity equivalent to not less than 4.5 per cent. of anhydrous acetic acid by weight.

II. A residue on drying at 212° F. not less than 2 per cent. by weight.

III. The residue should be free from any substance having an acid or pungent taste. It should be distinctly sour from the presence of malic acid. The residue should be of a dark reddish-brown color; any blackening of the residue renders it probable that the sample contains free mineral acid.

IV. The vinegar should, by the addition of a small quantity of solution of subacetate of lead yield, either at once or before the expiration of ten minutes, a flocculent precipitate of a brownish color. This precipitate consists of malic acid in combination with lead, associated with organic and coloring matters, and after a time forms a considerable sediment at the bottom of the vessel, and should leave the liquid above clear and transparent. In particular cases, this precipitate is of a decidedly brilliant pinkish-red color, depending probably upon the variety and condition of the apple.

V. Chloride of Barium or Nitrate of Silver in solution should give at most only very slight cloudiness, indicating merely traces of sulphates and chlorides.

VI. A portion of the dried residue upon the end of a platinum wire, held in the flame of a Bunsen burner, should give a flame of a clear violet color (potassium), and the ash which is left should be distinctly alkaline in its reaction to test paper.

Under the vinegar law, in this State, cider vinegar is legally defined to be the "legitimate product of pure apple juice, known as apple cider," and in order to be of standard character must be made *exclusively* from pure apple cider; must possess an acidity equivalent to the presence of not less than 4.5 per cent. of absolute acetic acid, and must contain not less than 2 per cent. of cider vinegar solids upon full evaporation over boiling water.

In order to judge therefore of the legal character of a vinegar purporting to be a cider vinegar it is necessary to examine it with reference to the presence of the proper proportion of acetic acid and of solids, and in order to ascertain whether the solids are really cider vinegar solids, it becomes necessary to examine these critically and carefully.

The principal characteristics of the residue obtained from the evaporation of a pure cider vinegar are admirably presented by Dr. B. E. Davenport (Report Mass. State Board of Health, 1886) and the description is here reproduced:

"There are certain characteristics peculiar to the residue of a pure cider vinegar, the principal of which are the following: It will be about 3 per cent. in weight, and never less than 2 per cent. It is always soft, viscid, of apple flavor, somewhat acid and astringent in taste. A drop of it taken up in a clean loop of platinum or iron wire and ignited in a col-



orless Bunsen gas lamp flame, imparts to it the pale lilac color of a pure potash salt, without any yellow due to sodium being visible. The ignited residue left in the loop of wire will be a fusible bead of quite a good size, and it will have a strong alkaline reaction upon moistened test paper-effervescing briskly when immersed in an acid.

"The presence in a vinegar of the *slightest* trace of any *free* mineral acid will prevent the ignited residue having any alkaline reaction, or effervescing with acids. The presence of any practical amount of commercial acetic acid to 'tone up' the strength of the vinegar, will cause the evaporated residue to have a smoky, pyroligneous odor or taste, and the ignited residue to impart another color to the Bunsen flame. Any corn glucose used in the vinegar will cause its residue, when ignited, to emit the characteristic odor of burning corn; and as the last spark glows through the carbonized mass, to usually emit the familiar garlic odor of arsenic, for the common oil of vitriol usually used in the production of glucose is now mostly derived from pyrites, which almost always contain arsenic. A glucose vinegar which has been made, as it sometimes is, without vaporizing the alcohol after the fermentation of the glucose, will also have a strong reducing action upon a copper salt in an alkaline solution, and also will give a heavy precipitation of lime with ammonium oxalate.

"A true malt vinegar always contains phosphates, and a wine vinegar cream of tartar. The presence of any acid vegetable substance in a vinegar is known by the residue having a pungent taste, especially if before the evaporation the vinegar has been exactly neutralized with soda.

"In a pure apple-cider vinegar hydrogen sulphide gas will not cause any discoloration, nor will the addition of a solution of either barium nitrate, silver nitrate or ammonium oxalate, cause anything more than the *very slightest* perceptible turbidity. But the addition of some solution of lead acetate—that is, of sugar of lead—will cause an immediate, voluminous and flocculent precipitation, which will all settle out in about ten minutes, leaving a clear fluid above.

"In most of the so-called 'apple vinegars' brought into this market from other states, the addition of some of this lead solution will cause but a slight turbidity without any precipitate settling out for several hours, and even then the precipitate will not be of the same appearance as in cider vinegar. Vinegar made from the repressings of fermenting apple pomace has this same peculiarity of not making a flocculent precipitation with lead acetate. It also leaves a high residue on evaporation.

"Pure apple cider vinegar contains no nitrates, as do most natural waters as used in spirit vinegars and commercial acetic acid. The presence, therefore, of these can usually be detected by the use of the diphenylamine test for nitrates, in the same manner as for water in milk.

"Sophistications of cider vinegar which will not be detected by some one or more of the above given tests are not likely to be met with, for the simple reason that they are not profitable."

#### WHITE WINE AND COLORED WINE VINEGARS.

There is practically no vinegar upon the market which is made from wine, and which can properly be called a wine vinegar.

The so-called white wine vinegars are prepared by the mashing and fermenting of starchy grains, or in some instances by the fermentation of glucose or the refuse from sugar manufacture. In either case the starch

or sugar is converted into alcohol, which is ordinarily separated by distillation, in the form of "low wines," and this is changed into acetic acid by percolation through tanks filled with beech shavings; generators, as they are called. The product is nearly or quite pure acetic acid, which when diluted with water, makes a vinegar of acceptable quality.

The colored wine vinegars are simply the white wines to which burned sugar or browned malt have been added to give them the desired shade of color, and the only objection attaching to their sale and use is that they are so frequently palmed off upon the consumer for the more expensive and more highly esteemed cider vinegar. These vinegars gave the department a great deal of trouble, and furnished the means by which extensive frauds were practiced upon the people of the State. Under the present law, however, which prohibits the artificial coloring of vinegars, the condition of the market has been vastly improved, and colored vinegars are now found on sale to only a limited extent. Nearly all of the dealers who supply this territory have ceased to sell colored vinegars in this State, and nearly all which are found, are the residues of lots purchased prior to the change in the law.

#### MALT VINEGARS.

The malt vinegars are little known in the American market, but are very popular in some other countries. They are prepared by the fermentation of the wort made from the malted grain, such as is used in the manufacture of beer or ale. This is subjected, first, to alcoholic fermentation, and then to acetification without being distilled. As thus prepared they contain a considerable amount of extractive matter derived from the grain which moderates their pungency and gives them a distinctive character peculiar to themselves. They are of peculiar, yet agreeable flavor, and are generally highly esteemed. The genuine malt vinegars contain a high percentage of acetic acid and of solid residue and invariably give reaction for phosphates.

#### RESULTS OF ANALYSES OF VINEGAR.

There have been received and examined during the period covered by this report 2,122 samples, nearly every town in the State being represented in the list. Of these, 1,585, or 74 per cent., were of legal character, and 537, or 26 per cent., were illegal.

Of these 903 were represented to be cider vinegar; 698 to be white vinegar; 335 to be colored vinegar, and 186 by various miscellaneous titles.

Of the 903 samples represented to be cider vinegar 794 were such, and of these 698 were of legal character and seventy-six were deficient in acidity or solids; twenty-two were repressing vinegars made from fermented pomace, and 107 were colored wine vinegars.

Of the 698 samples represented to be white wine vinegars 654 were of legal character and forty-four were deficient in acidity.

Of the colored wine vinegars there were 158 samples collected under the original law, and of these 142 were of legal character and sixteen were deficient in acidity. Since the taking effect of the amended law 177 samples have been collected, all of which have been classed as illegal.

Among the 186 samples classed as miscellaneous have been found a small number of samples of genuine malt vinegar, and a much larger number of what has been branded and sold as a malt vinegar, and which

really is either a colored low wine pure and simple, or a low wine with a considerable quantity of the extractive matter obtained from malted grain added to it to furnish the required solids.

A small number of samples have also been found which are made by the fermentation of the residues of the manufacture of beet sugar. If the article proves of a character satisfactory to the consumer, it would seem that this variety might in the future be manufactured quite extensively if the beet sugar industry is developed as has been anticipated.

When the sale of colored vinegars was ordered to cease, in accordance with the law, there were placed upon the market so-called "Combination" vinegars, purporting to be mixtures of cider vinegar and white wine vinegar. These were intended to take the place of the prohibited article and to be sold as a "Combination Cider" vinegar. These were immediately condemned as illegal upon the ground that in order to be in any manner whatever classed as a cider vinegar, it must be "exclusively the product of pure apple juice," and that no mixture or combination whatever was contemplated by the law, or to be allowed by the department. These goods are rarely, if ever, found on the market at the present time.

A very large share of the dealers in vinegar in the State have shown a willingness and a desire to comply with the law and with all the requirements of this department. A notable exception, however, is the Alden Vinegar Company, of St. Louis, Mo., who have, in defiance of the law, persisted in sending into the State large quantities of a cheap vinegar made from glucose, which they have palmed off upon innocent purchasers under numerous fanciful titles, calculated to deceive as to its true character. These vinegars are almost without exception illegal in character by reason of the misrepresentation of their character, and also because they are almost invariably deficient in acidity, or in other words, have been adulterated by the addition to what might have been, if properly branded, a legal vinegar, of from 30 to 50 per cent. of water. It is to be regretted that there is not a section in the law giving the proper officials of the department authority to prevent the entrance of such illegal goods into the State, or in case of their entrance, to seize upon and destroy them upon the presentation of proper proof of their adulterated and illegal character.

#### COMPARISON OF RESULTS.

There were reported by the writer in the Third Biennial Report of this department the results of the analyses of 675 samples of vinegar, of which 237, or 44 per cent., were of legal character, and 378, or 56 per cent., were illegal.

When these results are compared with those of the present report, viz: 74 per cent. of legal and 26 per cent. of illegal samples, it is evident that the efforts of the officials of the department are proving successful, and that the conditions of the market are greatly improved under the enforcement of the present laws.

#### REPORT UPON LARD.

The term lard is applied to the internal fat of the hog, separated from the other tissues of the animal by the aid of heat. Until within a comparatively few years the leaf-fat was the only portion employed in the production of lard, and leaf-lard was one of the purest of our food products. At the present time the condition of affairs is very different; but



little true leaf-lard is found upon the market, its place being largely taken by lards which are rendered from every part of the animal which is capable of yielding fat and which is not more valuable for some other purpose. This indiscriminate mingling of all sorts of fatty tissues in the rendering of lard, results, in spite of the attempt at purification, in the production of an inferior grade of lard, which is sometimes marketed in this condition, and sometimes subjected to adulteration by admixture of other fatty matters, either of animal or vegetable origin.

The prime object of lard adulteration is to afford the manufacturer an increased profit. This is brought about from the fact that certain of the substances which are used as adulterants are of little commercial value, and hence serve to relatively cheapen the product. The most frequently employed adulterants of lard are lard-stearine and oleo-stearine, and usually with these cotton-seed oil. The lard-stearine is the solid fatty product which remains after the liquid lard oil has been removed from the lard by pressure. This lard oil is used for lubricating and illuminating purposes and is quite valuable. The oleo-stearine is the residue which is left when the rendered caul fat of beeves is subjected to pressure, the liquid portion, known as oleo-oil, forming the basis of the butter substitute known as butterine. When these solid fats are employed to a considerable extent as adulterants it is necessary to add to the mixture enough of some fluid fat to give it the proper consistence, and for this purpose cotton-seed oil is employed.

The ordinary adulterated lard of the American market probably rarely contains more than 50 per cent. of lard, admixed with about 20 per cent. of stearines and about 30 per cent. of cotton-seed oil. There are also other varieties of adulterated lards found upon the market which probably contain but little, if any, lard, being made up from a mixture of lard-stearine and oleo stearine with cotton-seed oil. Extended investigations of these fraudulent practices have been made within the last few years in different places, and repressive legislation has been adopted in several states, including our own. The extent to which the fraud is being practiced is shown by the fact that of 141 samples examined by the Dairy Commission of New Jersey, in 1888, 61 were adulterated and 80 pure. Of 100 samples examined and reported upon by the Department of Agriculture during 1889, 74 were found to be adulterated with cotton-seed oil. It is probable, however, that in both of these series of investigations especial effort was made to obtain samples which were likely to prove to be adulterated, and that the figures as given do not in either case represent the actual proportion of samples of adulterated and pure lards upon the markets from which they were obtained.

#### REPORT UPON INSPECTION AND ANALYSIS OF LARD.

The lard supply of the State has been thoroughly and carefully examined into during the period covered by this report, and the results of the examination are such as to show that the effects of repressive legislation have been very satisfactory.

It is supposed by many that the lard supply of the State is very largely from the packing houses of Chicago, and that a considerable portion is adulterated with cotton seed oil. Investigation does not support this view and tends to show that a large and growing amount of the lard upon our markets is of local production and free from adulteration.

Of 483 samples of lard submitted for analysis the sources of manufacture were as follows:

Of local manufacture.....	95
T. M. Sinclair & Co., Cedar Rapids, Ia.....	62
Minneapolis Provision Co.....	34
Armour Packing Co., Kansas City.....	32
Minneapolis Packing & Stock Yards Co.....	30
Minnesota Packing & Provision Co., South St. Paul....	22
Geo. R. Newell & Co., Minneapolis.....	20
Armour & Co., Chicago.....	14
Dunham & Johnson, Minneapolis.....	12
O'Leary & Sons, St. Paul.....	17
Cedar Rapids Packing Co.....	14
J. F. Booge & Son.....	12
Armour-Cudahy Packing Co.....	8
Harrison, Farrington & Co., Minneapolis.....	6
A. Kelly & Co., Minneapolis.....	4
Owatonna Packing Co.....	6
Twin City Packing Co.....	6
Swift & Co., Chicago.....	3
N. K. Fairbanks & Co., Chicago.....	3
North American Beef Co., Minneapolis.....	2
Cudahy Bros., Milwaukee.....	3
Silberhorn Co.....	1
G. H. Hammond & Co.....	1
Unknown.....	77
Total.....	483

Of the 483 samples examined 475 were found to be pure lard and eight to be adulterated with cotton seed oil. The brands of the adulterated samples were as follows:

N. K. Fairbanks & Co.....	3
Armour & Co. ....	3
Swift & Co.....	1
Cudahy Bros.....	1
Total.....	8

Two of these samples were branded and sold as lard, the remainder were branded and sold as "compound lard."

That the condition of affairs is improving is shown by the fact that of 242 samples examined in 1889 and 1890, forty-two or 17 per cent. contained cotton seed oil, while of the 483 examined in 1891 and 1892, eight or 2 per cent. were thus adulterated.

#### LARD SUBSTITUTES.

About two years ago the attention of this department was directed to the fact that large amounts of a lard substitute, known as "Cottolene," and manufactured by N. K. Fairbanks & Co., of Chicago, were being shipped into the State, and evidence was secured that it was being extensively used in restaurants, bakeries and hotels, and handled to some extent by the trade. Examination showed the substance to be composed of beef stearine and cotton seed oil.

At the last session of the legislature a law was passed prescribing regulations under which such substitutes were allowed to be sold, and notices to that effect were sent to all engaged in its sale or use. As a result of these notices its use and sale has been very largely discontinued, and it is rarely found upon the market at the present time.

## REPORT UPON WINES.

Wine is properly the pure fermented juice of grapes ; its composition is very variable, and the differences in the varieties of grapes used admit of almost endless modifications of the product obtained from them. Moreover, many other conditions affect more or less the composition of wine, as the nature of the soil, the climate, the method of cultivation pursued, the weather during the particular season when the grapes were ripened, etc. The different kinds of wines sold can almost be numbered by the hundreds. They usually refer to the country where it is produced, or of whose product it is an imitation, as Port, Sherry, Maderia, etc., or to the variety of grape from which it is made, as catawba, riesling, zinfandel, etc. No generally recognized classification is made except into *white* or *red* wines, according to their color, and into *dry* or *sweet* wines, according to their content of sugar. The general name of champagne is given to effervescing wines.

In countries where the production of wine is one of the leading industries, like France and parts of Germany, the composition of the wines made is very well established, since scarcely any article of consumption has been the subject of so much chemical investigation. Thousands of analyses have been published, and there is little difficulty in arriving at the average composition of any of the standard brands.

In the United States, on the contrary, there is a very considerable dearth of recorded results in this line. The earliest analyses of American wines which have been published, were made by Merrick (*Amer. Chemist*, 6, 35), and comprise six varieties of California wines. During the same year Mallett and Cooper (*Chem. News*, 32, 160), published the results of the analyses of twelve varieties of Virginia wines. In 1880 there were made at the United States Department of Agriculture, by the late Henry B. Parsons, an extended series of analyses of American wines. During the same year there was established in California a Vitacultural Laboratory, having for its object the investigation of the wines produced in that State, and much valuable work has been done here by Professor Hilgard. In addition to these series of analyses, the only extended one of which I have knowledge is that reported by Dr. C. A. Crampton (*Bulletin No. 13. Part 3, U. S. Dept. of Agriculture*), who gives an exceedingly able and interesting review of the subject in all its bearings. In consequence of the comparatively small amount of work which has been done, and the shortness of the period covered by the investigations, it cannot be considered that the composition of American wines is by any means fully established as yet. This, however, does not in the least interfere with the examination of such wines for the presence of certain adulterants, the presence of which is not natural to wine, although it might perhaps result in uncertainty relative to other samples in which the verdict rested upon variations in the proportions of constituents which were normal to such wines. Relative to the adulteration of wine Dr. Crampton (*loc. cit.*), says : "The adulteration of wine has been practiced from an early date in those countries where the consumption is large. It has increased in amount and in the skillfulness of its practitioners, until at the present day it requires for its detection all the knowledge and resources which chemical science can bring to bear upon it, and even then a large part doubtless escapes detection."



In the series of analyses of American wines referred to above a large share of the samples were of known or unquestioned purity and naturalness, and hence the recorded evidence of adulteration of these wines is exceedingly meager.

It is not the intention of the writer to attempt a detailed report, at this time, upon the subject of wines, since far too little personal work has been performed to justify such a procedure. Such a report may be rendered at a future date when the investigation has been more thorough and extensive.

That there are extensive adulterations and sophistications of wines practiced in the United States, no one will question, and that the investigation of their nature and the regulation or suppression of their sale are important, all will admit.

It must not be assumed, however, that all wines upon the American market are necessarily of this character, since there is not a particle of evidence to support such a claim. There are sections of this country which are proving themselves capable of producing wines of excellent quality in all respects, and there is no evidence on record to show that they are adulterated or sophisticated during their manufacture or prior to their sale.

#### RESULTS OF EXAMINATION OF WINES.

Nearly fifty samples of wines of various brands have been examined. The samples have included both white wines and red wines, and a considerable variety of brands of both sweet and dry wines. Most of the samples were of California manufacture and were good types of their several brands. Detailed analyses of all of these samples have been made and the results have been such as to show the uniform good quality of the samples, and their substantial agreement with others of similar nature reported upon by other observers.

#### REPORT UPON MALT LIQUORS.

But very little work has been done on American beers; they seem to have shared with other dietary articles the general indifference of the American public to the composition of their food and drink.

There is no definite or established standard of composition, nor can there be until the subject has been considerably more fully investigated, although there has lately been considerable added to what had previously been known relative to the adulterations which are practiced with this class of substances.

The most extensive series of analyses which has thus far been reported, were made in 1885, under the authority of the State Board of Health of New York, by Dr. F. E. Engelhardt. This series includes 476 samples which were collected from various parts of the State, and were intended to represent the average composition of the beer retailed in the State. The following table shows the average composition of the several varieties, and is reported from Bulletin 13, U. S. Dept. of Agriculture:

Average composition of American malt liquors, as shown by analyses made for the New York State Board of Health by F. E. Engelhardt, Ph. D.

KIND.	Specific gravity.	Alcohol by wgt.	Extract.	Ash.	Phosphoric acid.
		Per cent	Per cent	Per cent	Per cent.
Lager, 172 samples .....	1.016	3.754	5.864	.259	.0964
Ale, 199 sample .....	1.013	4.622	5.423	.307	.0832
Porter, 70 samples .....	1.015	4.462	6.003	.345	.0942
Weiss, 28 samples .....	1.006	1.732	2.356	.189	.0491

## ADULTERATIONS OF BEER.

Upon this point Dr. Crampton (*loc cit.*), says: "Probably there is no article of daily consumption that has been so often subject to suspicion of adulteration or sophistication as beer. Its complex composition and peculiar nature have deceived people into making all sorts of charges against its purity, but experience has failed to establish the truth of by far the greater majority of these charges, and the facts of many published analyses show that it is as free from adulteration as most other articles of consumption and more so than some."

The principal adulterations which have been found in beers, are due to the use of substitutes for malted barley, either in the form of other grain, or by the addition of unmalted grain to that which has been malted, or even by the substitution of glucose for malt. The principal effects of these is the production of a beer which is poorer in albuminoid constituents and in phosphates, and hence is less nutritious than one prepared in the usual manner.

The nature of the bitters used in beer has long been the target towards which public suspicion is directed, and nearly every substance which possesses a bitter taste has been enumerated among the adulterations of beer. There are seemingly authentic cases of the discovery of picrotoxin and picric acid in beer, but there is probably much less of this hop substitution than the space given it in works on the subject would indicate.

The use of preservative agents is found rather frequently, the principal substance employed being salicylic acid. Of the 32 samples examined by the Department of Agriculture seven samples were found to contain this substance, which certainly must be considered as objectionable here as elsewhere in food stuffs.

## RESULTS OF EXAMINATION OF MALT LIQUORS.

Twenty samples of malt liquors of various kinds have been submitted to examination. They have been found to agree substantially in composition with similiar brands reported elsewhere and to be free from such unhealthful and detrimental substances as are alleged to have been sometimes found in beers.

## REPORT UPON DISTILLED LIQUORS.

There is no fixed and generally accepted standard to which all liquors must of necessity conform in composition. The most generally accepted standard is the United States Pharmacopoeia, which prescribes the characteristics which such liquors must have in order to admit of their employment as medical agents.

## REPORT UPON BRANDY.

The Pharmacopoeia defines brandy to be "an alcoholic liquid obtained by the distillation of fermented grapes, and at least four years old." It further prescribes that it shall contain from 36 to 47 per cent. by weight, of alcohol, shall not contain any fusel oil, nor shall the residue obtained by evaporation exceed 25 per cent. There should be no evidence that sugar or glycerine has been added, and it should contain a slight amount of tannin derived from the casks.

The difficulty of obtaining pure brandy of a proper age for medicinal use is very great. Most of the imported brandy is of inferior quality frequently by reason of absolute sophistication, while that made in Cali-

ifornia is very often inferior, and not sufficiently aged and bland for medicinal use. The following statement, made in the United States Consular Reports, November, 1887, page 333, is interesting in this connection:

The term brandy seems to be no longer applied to a spirit produced by the fermentation of grapes, but to a complex mixture, the alcohol of which is derived from grain, potatoes, or, worst of all, the refuse of the beet sugar refineries. It would seem to be fairly impossible at present to purchase a pure cognac, as each individual proprietor of a vineyard has become a distiller and compounder. He has acquired the art of imitating any special flavor or vintage of brandy that may be called for. Potato spirits and beet alcohols, the most deleterious and obnoxious of all the varieties of spirits, are sent from Germany into France in vast quantities. They are flavored, colored and branded or labeled to meet the wishes of American connoisseurs. The mere fact of coming out of bond, or straight through the custom house, is generally accepted here as sufficient evidence that they are pure and genuine. It is rather unfortunate that physicians themselves frequently strengthen this hallucination in favor of imported spirits by giving the most stringent orders to their patients to procure genuine French cognac, even though it may command tenfold the price of an absolutely pure spirit of domestic production. This imperative command becomes a cruel injustice in the case of poor patients. Under the best circumstances, what is there to be gained by the use of French brandy in preference to pure domestic spirit?"

Of twelve samples of brandy reported upon by the Dairy Commissioner of New Jersey, (Report for 1888), not one meets the pharmacopoeial requirement.

It may be questioned whether it is advisable or necessary in judging of the character of distilled liquors to insist upon the fulfillment of all the requirements of the pharmacopoeia, which ostensibly describes what they must be in order to be employed as medicines. In reply it can only be stated that at present there is no other standard, and that in order to decide upon this point will require a much more extended investigation of the characteristics of different samples of genuine liquors of various ages than has yet been made, after which a different standard may be adopted.

#### REPORT UPON WHISKEY.

This liquor is defined by the pharmacopoeia as follows: "An alcoholic liquid, obtained by the distillation of fermented grain, generally corn, wheat or rye, and at least two years old. Its alcoholic strength should be between 44 and 50 per cent. by weight. It should contain no fusel oil, nor more than 0.25 per cent. of residue, on evaporation, and traces of tannin from the casks." The object sought in this description is to insure a properly made and aged liquor, and one without irritant or acrid properties.

#### RESULTS OF EXAMINATION OF BRANDY AND WHISKEY.

Twenty samples of brandy have been examined and only three conform to the pharmacopoeial requirement. At the same time with three or four exceptions, in my judgment, the samples could not be stated to contain anything that would be detrimental to health as such liquors are legitimately employed, or which would preclude their use as medicinal agents.



Twenty-five samples of whiskey have been examined and a large share have been found to contain fusel oil and an excess of extractive matter. There is no question but what a large share of the results which are attributed to the moderate use of whiskey, are really due to the effect of fusel oil and other impurities which the whiskey contains. This is not an added impurity but a necessary result of the method of manufacture of the liquor, and is best gotten rid of by allowing the liquor to remain in store for several years for the purpose of undergoing a maturing process. When this is done the fusel oil and other impurities are changed in composition and disappear. The only form of actual adulteration found was the addition of water which serves to reduce the alcoholic strength and diminish the value.

REPORT UPON FOODS INVESTIGATED, NOT INCLUDED UNDER THE  
PRESENT LAWS.

It has been considered advisable for the chemists to make such investigations as the condition of affairs warranted, of articles not included under the present laws, but which might at some future time be deemed proper to be included in the list of foods, the sale of which is placed under legal restrictions, and to report upon the same at this time. These investigations have been made with care and unquestionably represent the extent of adulteration which is prevalent, in connection with such articles in the State of Minnesota.

REPORT UPON CIDER.

Twenty-four samples of cider have been submitted to analysis. The result has been to show the genuineness of 22 samples and that two were artificial products, and not made from apple juice. All of the genuine samples showed evidence of the presence of malic acid and the characteristic extractive of apples, when treated with solution of lead acetate or sub-acetate.

Thirteen of the samples show the presence of salicylic acid, which is added for the purpose of retarding the fermentation and thus keeping the cider sweet. This substance is a valuable remedy in disease, but it is the opinion of the scientific world everywhere that it is utterly unsuited for use in any article which is to be used as a food or drink, since it is quite likely to prove injurious when habitually ingested. Its use is prohibited in the various European countries and discountenanced in several of our own states by the official boards which have jurisdiction in the matter. The writer has been informed that it is customary to use from three to four ounces of the acid to a barrel of forty gallons, and that the longer the cider is to be kept the greater the amount employed. Now, if four ounces be added to forty gallons, there will be present in each pint of the cider between five and six grains of the acid, and as cider is a substance which is often drank with great freedom, it is easily seen that large quantities of the acid would be taken, and that it would be likely to prove injurious, there is little doubt among those who have investigated the matter the most thoroughly. It is asserted that in some localities cider which has been examined gives evidence of having been fortified by the addition of alcohol, which would tend to check fermentation and increase its intoxicating effect. None of the samples examined have been of this character.

## REPORT UPON SUGARS.

During the past five years the writer has examined with a good deal of care, about 150 samples of sugar as found upon the market. The reason for making this extended series of examinations was in order to ascertain whether the prevalent idea that sugars were adulterated with glucose had any substantial foundation in fact. These samples were all purchased in the State of Minnesota and represented every brand known to this market, and as the examination of samples has extended over a period of five years, and a reasonably close watch has been kept upon the market during the entire time, the results of these examinations may fairly be considered to represent the sugars of the northwestern market. The results showed an entire absence of adulteration with glucose in every case. In those sugars of low grade which contain glucose, quantitative determination showed it to be invariably within the limits of the process of manufacture of such grades of sugars. Indeed the only addition which was found in any case, was a considerable quantity of water in some of the moist, brown sugars of an inferior grade. In consideration of these results I have no hesitation in believing that there has not, during late years at least, been any attempt made to adulterate sugars with glucose in this part of the country, and that no samples thus adulterated have been or are on sale upon the markets of this State. These results are confirmed and substantiated by an extended series of investigations of sugars recently made under the direction of Dr. H. W. Wiley of the U. S. Department of Agriculture, and with the assistance of ten experienced and able chemists in as many different sections of the country. Each one of the ten gentlemen engaged in making the investigation purchased in his own neighborhood 50 samples of sugars of different grades and brands and submitted them to careful polariscopic and chemical examination. The results were that a total absence of glucose as an adulterant was established in every case, and that the only matter which could be regarded as foreign was water, which was present in excessive amounts in some of the low grades.

## REPORT UPON SYRUPS.

There is abundant evidence both here and elsewhere that molasses and syrups are very generally adulterated with large amounts of glucose which has been prepared from corn. The adulterated article is ordinarily much more pleasing to the eye and more highly regarded than the genuine. There can be no valid objection urged to these glucose syrups by reason of any effect upon the health of the consumer, as the glucose of the market at the present time is free from all deleterious impurities, and glucose itself is as well suited for use as a food as is cane sugar or syrup. Such mixed syrups should, however, be required to be sold as "mixtures" or as "glucose syrups," for the reason that the sweetening power of glucose is very much less than that of cane sugar and hence, by the substitution of the cheaper and less sweet article, a commercial fraud is perpetrated upon the innocent purchaser.

Compounds of tin are also sometimes found in the molasses and syrups, having been derived from the chemicals employed in the manufacture and bleaching processes.

Maple syrup and maple sugar are also often found to be adulterated with either glucose or cane sugar, or both, or in some cases to be absolute fabrications, made by flavoring cane sugar with an extract prepared from the wood or bark of the hickory tree, an ingenious process for which letters-patent were secured some years since.

#### REPORT UPON HONEY.

Among the delicacies which are highly esteemed by the American people we can justly rank honey. Honey may be stated to be the nectar of flowers and other saccharine exudations of plants, gathered by bees and stored in cells built at least in part by the bees themselves. Its production constitutes an important industry in many sections of the country, among which may be included some portions of our own State. Naturally, from its mode of production honey must be a moderately expensive luxury, and such being the case it is not to be wondered at that the skill of those who prey upon the public by adulterating foods has been devoted to devising substitutes and inferior admixtures of less cost, with which to deceive the public, impoverish legitimate producers and enrich themselves. That such cheap substitutes are prevalent, and that such inferior admixtures are not wanting is apparent to all, and especially to those who have investigated the subject with any degree of care. In no form does the article escape adulteration. Samples have been found in which an artificial comb had been prepared and filled with an artificial honey made from glucose or with glucose syrup flavored by admixture with honey. Or in other cases a natural comb after being drained of its contents has been found to be again filled with the inferior or fraudulent substitute. Or in other cases still the bee itself is made a partner in the fraud by feeding upon glucose, sugar, or other saccharine material provided for that purpose in proximity to the hive, and filling the comb with the product, which it is conceded by all is not entitled to be classed as a pure and genuine honey even though produced by the assistance of the bee.

But it is in the strained honey of the market that the greatest amount of fraud is encountered and here the extent of adulteration is surprising. The principal adulterations are cane sugar, glucose, or other sugars as would be expected, and as all of these are much cheaper than the honey itself a handsome profit is realized by the producer. An elaborate series of investigations of the strained honeys of different sections of the country have been made recently in a similar manner to those referred to in the case of sugars. The results have demonstrated the universal existence of a considerable degree of adulteration. This has been found to vary considerably in different sections, however, the variations seeming to depend in some degree upon the extent of the local production of genuine honey, and in no small degree upon the enactment and enforcement of laws prohibiting or regulating the sale of adulterated honey. Examination of the results of the examination of 500 samples shows an adulteration of nearly or quite 40 per cent of all that were examined.

In the city of Minneapolis there has been sold in bulk, from door to door by street peddlers, what purported to be pure strained honey. Investigation showed that this honey (?) was obtained at, not to exceed 8 cents per pound, of commission merchants in the city, who purchased it in barrels in Chicago. It is believed that comment is unnecessary when the facts are stated.



Investigation of a limited number of samples shows an adulteration of not less than fifty per cent. of all which were collected. There is no question but what the keepers of apiaries in the State would be greatly benefited by the enactment of such laws as would protect them in the sale of pure honey, and compel all who produced or sold fraudulent or inferior substitutes to do so under such labels and in such a manner as to allow of no deceit, and to protect the interest of purchasers.

#### REPORT UPON SPICES AND CONDIMENTS.

There are no classes of substances which enter into the composition of our foods which are so extensively and universally adulterated as are the spices and condiments. During the past ten or twelve years their character has been investigated in several different states, and in each case the evidence has been the same, viz: that adulteration is the general rule and purity is the exception. The following table will show the extent of adulteration in per cents of the samples examined, which has been discovered as a result of several different series of investigations, including one of 157 samples made by the writer.

ARTICLE.	Canada, 1878.	Massachu- setts, 1885.	New York, 1881.	Minnesota, 1889-90.
Allspice.....	92.5	21.1	70.4	36.0
Cassia.....	50.0	.....	57.1	.....
Cloves.....	83.3	83.5	76.2	85.0
Cinnamon.....	66.6	36.0	81.8	81.0
Ginger.....	61.5	23.6	60.0	94.0
Mustard.....	100.0	64.8	66.6	91.0
Pepper.....	70.0	.....	.....	.....
Black pepper.....	.....	78.6	70.0	75.0
White pepper.....	.....	65.0	71.4	70.0

The following table shows the character of the substances which have been discovered to be used as spice adulterants in this country (U. S. Dep't Agr., Bul. No. 13, Part 2):

#### SPICES.

#### ADULTERANTS.

Allspice.....Spent cloves, clove stems, cracker dust, ground shells, charcoal, mineral colors, yellow corn.  
 Cayenne. .... Rice flour, salt and ship-stuff, yellow corn, turmeric and mineral red.  
 Cassia. .... Ground shells, crackers, turmeric, minerals.  
 Cinnamon...Cassia, peas starch, mustard hulls, turmeric, minerals, cracker dust, burnt shells, charcoal.  
 Cloves. .... Spent cloves, clove stems, minerals, allspice, roasted shells wheat flour, peas.  
 Ginger.....Cereals, turmeric, mustard hulls, cayenne, peas.  
 Mace.....Cereals, starch, buckwheat, wild mace,  
 Nutmeg.....Cereals, starch, wild nutmeg.  
 Pepper.....Refuse of all sorts, pepper dust, ground crackers, ship-stuff, rice, mustard hulls, charcoal, cocoanut shells, cayenne, beans, bran, yellow corn.  
 Mustard.....Cereals and starch, turmeric, peas, yellow corn meal, ginger, gypsum.

These adulterants are generally prepared upon a large scale and furnished to the smaller spice millers under the title of "P. D." pepper dust, "H. P. D." hot pepper dust "W. P. D." white pepper dust, "P. D." cloves, "P. D." cinnamon, etc., and by them employed to adulterate the ground spices to such an extent as is commensurate with the price which the dealer is willing to pay for his goods, the purity being strictly regulated by the price paid. The only ones imposed upon by this system are the consumers, who are cheated in the value and quality and often in the weight as well, of whatever they buy.

The extent of adulteration within this field can hardly be over-estimated. While there are certain standard brands which are of satisfactory purity, it is a fact that in the ordinary community these meet with a comparatively limited sale, while the great proportion which are sold are of a cheap and inferior character. This is especially the case among the smaller and suburban stores, where frequently nothing other than the cheap, adulterated brands are found.

During last year a microscopic examination was made of a large number of samples and the following results were reported:

	No. of samples.	No. adul- terated.	No. pure.
Black pepper.....	15	13	2
White pepper.....	4	3	1
Cayenne.....	6	4	2
Cloves.....	16	14	2
Allspice.....	16	10	6
Cinnamon (cassia).....	13	10	3
Ginger.....	11	10	1
Total .....	81	64	17

During the present year 39 samples of the same species have been collected and examined with the result of demonstrating that the condition as previously found was not exaggerated and that the same adulterations were present in the later as the earlier samples, 12 samples were classed as pure and 27 as adulterated.

It is undoubtedly a fact that the adulteration of spices is in the nature of commercial frauds, and exercise little or no influence upon the public health. This, however, is no reason why repressive measures should not be adopted having for their object the protection of the public from fraud by requiring that all such inferior articles be plainly and distinctly labeled "Spice Compounds" or "Spice Mixtures," and prohibiting their sale under severe penalties without such distinguishing mark.

#### REPORT UPON GROUND MUSTARD.

Mustard is the product of the crushing and sifting of the seeds of the black and white mustard. In order to be considered as pure it should be made from the seeds in their natural condition without expression of the fixed oil, and should be free from the addition of diluents such as starch or flour, and of coloring matters such as turmeric, chrome yellow or any of the coal-tar colors. It has been maintained by some manufacturers that it was impossible to prepare a mustard of good keeping qualities, without the preliminary expression of a portion of the fixed oil, or

which should be palatable without dilution with inert matter like starch or flour. The falsity of both of these claims is proven by the fact that the best grades upon the market are made from the natural seed, and are free from such adulterants. Twenty-two samples have been analyzed, and the results prove that judged by what they should be if pure and properly made, nearly all are largely adulterated and of inferior quality. Of the 22 samples, 18 contain considerable quantities of flour or starch as an adulterant, and of turmeric as a coloring material; four are adulterated with terra alba, and four are pure and of good quality.

#### REPORT UPON CREAM OF TARTAR.

Forty-nine samples of cream of tartar have been examined, of which ten were found to be pure and the remainder sophisticated. The latter were either mixtures of the acid calcium phosphate with calcium sulphate and flour and starch, or mixtures of terra alba and a small amount of tartaric acid and flour. Seven contain alum. In nine the proportion of terra alba exceeds 50 per cent. of the weight. In all of the adulterated samples the acidity is very low as compared with what it should be in a pure cream of tartar; indeed with most of these it would be necessary to use from five to eight times as much as would be necessary of the genuine article, in order to get the same effect. The selling price of these exceedingly inferior mixtures to the consumer is the same as of the pure article, although the actual market value of the latter is probably fully ten times that of the former.

If all housewives would bear in mind that cream of tartar is entirely soluble in boiling water, giving a clear and limpid solution, and would discard and decline to use all that purported to be such, which failed to thus show complete solubility, the fraudulent articles which are now palmed off upon them might all be gotten rid of, since not one of them would conform to this simple test.

#### REPORT UPON COFFEE.

It has long been known that ground coffee has been extensively adulterated by the addition of chicory and roasted peas, beans, etc., and in many instances is an entirely fictitious article since it does not contain coffee at all. In this section of country, however, until within a comparatively short time, very little ground coffee has been found upon the market. In consequence of the advances in the prices of coffees the skill of the adulterator has been stimulated, and at the present time there are found numerous varieties of adulterants intended for use in ground coffee. The old-time admixtures of coffee with roasted peas, or beans, or chicory, or both, are now frequently found, as are also newer adulterants manufactured for the purpose from either chicory with dough prepared from pulverized and roasted cereals, or in the form of masses resembling roasted dough made principally from rye flour and usually without the addition of chicory. Both of these forms are found on sale by themselves and are intended to be added to whatever proportion of coffee is desired by the retailer or grinder.

The skill of the adulterator however does not stop at this point. In consequence of the prevailing tendency upon the part of the public toward buying coffee in the form of the berry and having it ground at the time of the purchase, there has been recently introduced and placed upon the market an artificial or spurious coffee kernel itself. In 1886 it



was reported in certain of the eastern trade journals that an artificial coffee bean was being manufactured, but in consequence of a lack of direct evidence the statement was given little credence. About three years ago this form of fraud appeared upon the market in New York and New Jersey. My attention was attracted to the matter by the receipt of a sample of the spurious coffee from Dr. Wallace, the chemist of the N. J. Dairy and Food Commission. A reasonably thorough inspection of the local market failed at that time to afford any evidence of the presence of this article, but within the past year a number of samples of coffee containing from 25 to 50 per cent. of the fraudulent coffee have been found upon this market. These have all been traced to a single wholesale dealer and are reported to be manufactured in Boston. This artificial coffee is a very good imitation of the genuine although a reasonably close examination will detect its presence. It is composed of a mixture of a flour probably of rye, admixed with a mucilaginous material and moulded so as to represent the genuine coffee, being afterward roasted and faced so as to give it the desired glossy appearance. These may be purchased and admixed with the genuine coffee in any desired proportion and as they are stated to cost about four cents per pound a handsome profit is realized to the manufacturer and wholesaler and a gross fraud is perpetrated upon the consumer. A total of 40 samples of ground or broken coffee have been examined and all have proven to be adulterated, and 10 samples of the adulterated whole coffee have been received.

It is believed by the writer that repressive legislation aimed at this species of fraud would be in the interest of the public.

#### REPORT UPON FRUIT PRESERVES, JELLIES AND JAMS.

There are on sale upon this as upon all American markets a great variety of jellies, jams and fruit preserves. They are very largely consumed by the poorer people who find the preparation of such articles from the fresh fruits beyond their means. They are largely manufactured by large firms associated together in the form of a trust, hence the articles are substantially the same in all parts of the country. The following, taken from the report of the Dairy and Food Commissioner of New Jersey for 1889, will show the general character of the substances. "One hundred and ninety-two samples of fruit preserves were examined, of which thirty-three were pure and one hundred and fifty-nine adulterated. The preserves were either in the form of jelly or jam. The following table will show the names of the fruits printed on the labels and the number of samples examined:

Name on Label.	Number examined.	Pure.	Adulterat'd
Raspberry.....	29	4	25
Red Currant.....	71	6	65
Quince.....	16	1	15
Apple.....	4	4	.....
Orange.....	3	.....	3
Strawberry.....	25	4	21
Apple Butter.....	3	2	1
Plum.....	8	2	6
Crab Apple.....	1	1	.....
Pineapple.....	4	.....	4
Peach.....	9	2	7
Blackberry.....	4	3	1
Cranberry.....	2	.....	2
Cherry.....	9	2	7
Grape.....	1	1	.....
Lemon.....	1	1	.....
Unknown.....	3	.....	3
Total.....	192	33	159

At the time this investigation of the fruits, jams and jellies sold in the State was begun it was thought that little adulteration would be detected, since the cost of fruit and cane sugar was so low that little incentive for sophistication appeared to exist. But before our work had advanced very far it was ascertained that the greater proportion of the cheap articles were not only adulterated, but many were devoid of any of the fruit mentioned on the label.

The presence of foreign colors, glucose, and materials to make up the bulk of the article was easily detected.

The following table will show the articles used in the fraudulent jams and jellies:

Articles used to give substance: Apple pomace, apple juice, starch, glue, gelatine, Japanese isinglass.

Articles used as flavors. Apple, inferior or spoiled fruit juices, artificial flavors and the compound ethers, acetic acid.

□ Artificial colors used: Aniline dyes, cosine, fuchsine, Bismark brown, garnet red, ruby red, and various carmines."

□ An examination of a small number of samples purchased in this State shows essentially the same condition of affairs to exist as outlined in the above report.

Respectfully submitted.

CHARLES W. DREW, PH. B., M. D.,

Chemist.

## MINNESOTA STATE DAIRY AND FOOD LAWS.

AS ENACTED AND AMENDED BY THE LEGISLATURE OF 1891.

## CHAPTER 247, GENERAL LAWS OF 1889.

(S. F. No. 243.)

An act to amend chapter one hundred and forty (140), an act to prevent deception in the sale of dairy products, and to preserve the public health; being supplementary to, and in aid of, chapter one hundred and forty-nine (149) of the laws of one thousand eight hundred and eighty-five (1885), entitled "An act to prohibit and prevent the sale or manufacture of unhealthy or adulterated dairy products."

*Be it Enacted by the Legislature of the State of Minnesota:*

That chapter one hundred and forty (140) of the General Laws of Minnesota for the year one thousand eight hundred and eighty-seven (1887) be, and the same is hereby amended so as to read as follows:

SECTION 1. No person or persons shall sell or exchange, or expose for sale or exchange, any unclean, unhealthy, adulterated or unwholesome milk, or shall offer for sale any article of food made from the same, or of cream from the same. This provision shall not apply to pure skim milk cheese, made from milk which is pure, healthy, wholesome and unadulterated, except by skimming. Whoever violates the provisions of this section shall be deemed guilty of a misdemeanor and shall be punished by a fine of not less than ten dollars (\$10) nor more than one hundred dollars (\$100), or by imprisonment of not less than one (1) month or more than three (3) months, or by both such fine and imprisonment for the first offense, and by three (3) months' imprisonment for each subsequent offense.

Section two (2) of said act is hereby amended so as to read as follows:

SEC. 2. No person shall keep cows for the production of milk for market, or for sale or exchange, or for manufacturing the same, or cream from the same, into articles of food, in a crowded or unhealthy condition, or feed the cows on food that is unhealthy or that produces impure, unhealthy, diseased or unwholesome milk. No person shall manufacture from impure, unhealthy, diseased or unwholesome milk, or of cream from the same, any article of food. Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished by a fine of not less than ten dollars (\$10) nor more than one hundred dollars (\$100), or by imprisonment of not less than one (1) month or more than three (3) months, or by both such fine and imprisonment for the first offense, and by three (3) months' imprisonment for each subsequent offense.

Section three (3) of this act is hereby amended to read as follows:

SEC. 3. No person or persons shall sell, supply, or bring to be manufactured, to any butter or cheese manufactory, any milk diluted with water, or any unclean, impure, unhealthy, adulterated or unwholesome milk, or milk from which any cream has been taken, except pure skim milk to skim cheese factories, or shall keep back any part of the milk commonly known as "strippings," or shall bring or supply milk to any butter or cheese manufactory that is sour (except pure skim milk to skim cheese factories.) No butter or cheese manufactories, except those who buy all the milk they use, shall use for their own benefit or allow any of their employes or any other person to use, or the product thereof brought to said manufacturers, without the consent of the owners thereof. Every



butter or cheese manufacturer, except those who buy all the milk they use, shall keep a correct account of all the milk daily received, and of the number of pounds and packages of butter, number and aggregate weight of cheese made each day, the number of packages of cheese and butter disposed of, which shall be open to inspection to any person who delivers milk to such manufacturer. Whoever violates the provisions of this section shall be deemed guilty of a misdemeanor, and shall be punished for each offense by a fine of not less than ten dollars (\$10) nor more than one hundred dollars (\$100), or not less than one (1) month or more than three (3) months' imprisonment, or by both such fine and imprisonment.

Section four (4) of said act is amended so as to read as follows:

SEC. 4. No person shall manufacture out of any oleaginous substance or substances, or any compound of the same, or any other compound, other than that produced from unadulterated milk or of cream from the same, any article designed to take the place of butter or cheese produced from pure, unadulterated milk or cream from the same, or shall sell or offer for sale the same as an article of food. This shall not apply to pure skim milk cheese made from pure skim milk. Whoever violates the provisions of this section shall be deemed guilty of a misdemeanor and shall be punished by a fine of not less than one hundred dollars (\$100) or more than five hundred dollars (\$500) or not less than six (6) months or more than one (1) year's imprisonment, or by both such fine and imprisonment for the first offense, and by imprisonment for one (1) year for each subsequent offense.

Section five (5) of said act is hereby amended so as to read as follows:

SEC. 5. No person, by himself or his agents or servants, shall render or manufacture out of any animal fat, or animal or vegetable oils not produced from unadulterated milk or cream from the same, any article or product in imitation or semblance of or designed to take the place of natural butter or cheese produced from pure, unadulterated milk or cream of the same, nor shall he or they mix, compound with or add to milk, cream or butter any acids or other deleterious substance or any animal fats or animal or vegetable oils not produced from milk or cream, with designs or intent to render, make or produce any article or substance for human food in imitation or semblance of natural butter or cheese, nor shall he sell, keep for sale or offer for sale any article, substance or compound made, manufactured or produced in violation of the provisions of this section, whether such article, substance or compound shall be made or produced in this state, or in any other state or country. Whoever violates the provisions of this section shall be deemed guilty of a misdemeanor, and be punished by a fine of not less than one hundred dollars (\$100) nor more than five hundred (\$500) nor less than six (6) months' or more than one (1) years' imprisonment for the first offense, and by imprisonment for one (1) year for each subsequent offense.

Nothing in this section shall impair the provisions of section four (4) of this act.

Section six (6) of said act is hereby amended so as to read as follows:

SEC. 6. No person shall manufacture, mix or compound with or add to natural milk, cream or butter any animal fats or animal or vegetable oils, nor shall he make or manufacture any oleaginous substance not produced from milk or cream with intent to sell the same for butter or cheese made from unadulterated milk or cream, or have the same in his possession, or offer the same for sale with such intent, nor shall any article or substance or compound so made or produced be sold for butter or cheese, the product of the dairy. If any person shall coat, powder or color with annatto or any coloring matter whatever, butterine or oleomargarine or any compounds of the same, or any products or manufacture made in whole or in part from animal fats, or animal or vegetable oils not produced from unadulterated milk or cream, whereby the said product, manufacture or compound shall be made to resemble butter or cheese, the product of the dairy, or shall have the same in his possession, or sell or offer for sale, or have in his possession any of said products which shall be coated or colored in semblance of or to resemble butter or cheese, it shall be prima facie evidence of an intent to sell the same for butter or cheese, the pro-

duct of the dairy. Whoever violates any of the provisions of this section shall be deemed guilty of misdemeanor and punished by a fine of not less than one hundred dollars (\$100) nor more than one thousand dollars (\$1,000.)

This section shall not be construed to impair or affect the prohibition of sections four (4) and five (5) of this act.

Section seven (7) of said act is hereby amended so as to read as follows:

SEC. 7. No person shall offer, sell or expose for sale, butter or cheese branded or labeled with a false brand or label as to the quality of the article, or to the county or state in which the article is made.

The Minnesota State Dairy and Food Commissioner is hereby authorized and directed to procure and issue to the cheese manufacturers of the State, upon proper applications therefor, and under such regulations as to the custody and use thereof as he may prescribe, a uniform stencil brand bearing a suitable device or motto and the words "Minnesota State Full Cream Cheese." Every brand issued shall be used upon the outside of the cheese, and also upon the package containing the same, and shall be a different number for each separate manufactory, and the commissioner shall keep a book in which shall be registered the name, location and number of each manufactory using the said brand, and the name or names of the persons at each manufactory authorized to use the same.

It shall be unlawful to use or permit such stencil brand to be used upon any other than full cream cheese, or packages containing the same. Minnesota state full cream cheese, of which there be less than forty (40) per centum of fats to total solids shall be deemed, for the purpose of this act to be adulterated. Whoever violates the provisions of this section shall be deemed guilty of a misdemeanor, and for each and every cheese or package so falsely branded shall be punished by a fine of not less than twenty-five dollars (\$25) or more than fifty dollars (\$50) or imprisonment of not less than fifteen (15) days or more than thirty (30) days.

Section eight (8) of said act is hereby amended so as to read as follows:

SEC. 8. The governor shall appoint a commissioner, who shall be known as the State Dairy and Food Commissioner, who shall be a citizen of this State, and who shall hold his office for a term of two (2) years, or until his successor is appointed, and shall receive a salary of eighteen hundred (\$1,800) dollars per annum, and his necessary expenses incurred in the discharge of his duties under this act, and shall be charged under the direction of the governor, with the enforcement of the various provisions thereof. Said commissioner may be removed from office at the pleasure of the governor, and his successor appointed as above provided for. The said commissioner is hereby authorized and empowered to appoint a secretary whose salary shall be twelve hundred (\$1,200) dollars per year, and such assistant commissioners, and to employ such experts, chemists, agents and such counsel as may be deemed by him necessary for the proper enforcement of this law, their compensation to be fixed by the commissioner. The sum of fifteen thousand dollars (\$15,000) annually is hereby appropriated, to be paid for such purposes out of any moneys in the treasury not otherwise appropriated. All charges, accounts and expenses authorized by this act shall be paid by the treasurer of the State upon the warrant of the state auditor. The entire expenses of said commissioner shall not exceed the sum appropriated for the purpose of this act. The said commissioner shall make biennial reports to the legislature, not later than the fifteenth (15th) day of January, of his work and proceedings, and shall report in detail the number of assistants commissioners, experts, chemists, agents and counsel he has employed, with their expenses and disbursements. The said commissioner shall have a room in the capitol, to be set apart for his use by the governor. This section shall not affect the tenure of office of the present commissioner, nor to be construed to impair or affect any of the provisions in section seven (7) of chapter one hundred and forty-nine (149) of the law of one thousand eight hundred and eighty-five (1885), except in the sum of money appropriated.

SEC. 9. The said commissioner and assistant commissioners, and such experts, chemists, agents and counsel as they shall duly authorize for the purpose, shall have access, ingress and egress to all places of business, factories, farms, buildings, carriages, cars, vessels and cans used in the manufacture and sale of any dairy product or any imitation thereof.



They also shall have power and authority to open any package, can or vessel containing such articles which may be manufactured, sold or exposed for sale, in violation of the provisions of this act, and may inspect the contents therein and may take samples therefrom for analysis.

All clerks, bookkeepers, express agents, railroad officials, employes or common carriers shall render to them all the assistance in their power, when so requested, in tracing, finding or discovering the presence of any prohibited article named in this act.

Any refusal or neglect on the part of such clerks, bookkeepers, express agents, railroad officials, employes or common carriers, to render such friendly aid shall be deemed a misdemeanor, and be punished by a fine of not less than fifty dollars (\$50) nor more than one hundred dollars (\$100) for each and every offense.

SEC. 10. The commissioner shall provide blanks, which shall be furnished to all proprietors or managers of creameries, cheese factories or milk dairies that ship milk to the cities, and all the vendors or peddlers of milk in the cities, within the State, for the purpose of making a report of the amount of milk and dairy goods handled, and all owners or managers of such creameries and cheese factories shall, on the first (1st) day of November of each year, send to the dairy and food commissioner a full and accurate report of the amount of business done during the year, and all milk dairies, milk vendors or milk peddlers shall send to the state dairy and food commissioner quarterly reports of all the business done by each and every such person, firm or company in handling dairy products during the last three (3) months past, as designated under the different headings of such printed blanks.

Any neglect or failure, or false statement on the part of any proprietor or manager of such creamery, cheese factory, dairy, or any milk vender or milk peddler shall be considered guilty of a misdemeanor, and be punished by a fine of not less than ten dollars (\$10) nor more than one hundred dollars (\$100).

Section eleven (11) of said act is hereby amended so as to read as follows:

SEC. 11. No person shall sell or offer for sale any cream taken from impure or diseased milk, or cream that contains less than twenty (20) per centum of fat. Whoever violates the provisions of this section shall be deemed guilty of a misdemeanor, and shall be punished by a fine of not less than ten dollars (\$10) nor more than one hundred dollars (\$100).

Section (12) of said act is hereby amended so as to read as follows:

SEC. 12. In all prosecutions under this act relating to the sale and manufacture of unclean, impure, unhealthy, adulterated or unwholesome milk, if the milk be shown to contain more than eighty-seven (87) per centum of water fluids or less than thirteen (13) per centum milk solids, of which less than three and one-half (3½) per centum shall be fat, shall be declared adulterated, and milk drawn from cows within fifteen (15) days before and four (4) days after parturition, or from animals fed on distillery waste or brewers' malt, or any unhealthy food whatever, shall be deemed, for the purpose of this act, to be unclean, impure, unhealthy and unwholesome milk. The penalties for any violation of this section are the same as those of section two (2) of this act. This section shall not prevent the feeding of ensilage from silos.

No person shall sell or expose for sale in any store or place of business or on any wagon or other vehicle used in transporting or selling milk from which cream has been removed, or milk commonly called "skimmed milk," without first marking the can or package containing said milk with the words "skimmed milk" in large, plain, black letters, each letter being at least one inch high and one-half inch wide. Said words to be on the top or side of said can or package, where they can be easily seen.

Whoever violates the provisions of this section shall be deemed guilty of a misdemeanor, and shall be punished by a fine of not less than twenty-five (25) nor more than one hundred (100) dollars for each and every offense.

SEC. 13. Every person who conveys milk in carriages, carts or otherwise, for the purpose of selling the same in any city or town of two thousand inhabitants or more, in the State of Minnesota, shall annually, on



the first day of May, or within thirty days thereafter, be licensed by the state dairy and food commission to sell milk within the limits of said city or town, and shall pay to the said state dairy and food commissioner the sum of one dollar (\$1) each, to the use of, dairy and food commission.

Licenses shall be issued only in the names of the owners of carriages, carts or other vehicles, and shall, for the purpose of this act, be conclusive evidence of ownership. No license shall be sold, assigned or transferred. Each license shall record the name, residence, place of said business, number of carriages, carts or other vehicles used, the name and residence of every driver, or other person engaged in selling said milk, and the number of the license. Each license shall, before engaging in the sale of milk, cause his name, the number of his license and his place of business to be legibly placed on each outer side of all carriages, carts or other vehicles used by him in the conveyance and sale of milk, and he shall report to the state dairy and food commissioner any change of driver or other person employed by him, which may occur during the term of his license. Whoever, without being first licensed under the provisions of this section, sells milk, or exposes it for sale from carriages carts or other vehicles, or has it in his custody or possession with intent to sell, and whoever violates any of the provisions of this section, shall, for the first offense, be punished by a fine of not less than ten dollars (\$10), nor more than fifty dollars (\$50). For a second offense, by a fine of not less than fifty dollars (\$50) nor more than one hundred dollars (\$100), and for a subsequent offense by fine of fifty dollars and imprisonment in the county jail for not less than thirty (30) nor more than sixty (60) days.

SEC. 14. Every person, before selling milk, or offering it for sale in a store, booth, stand or market place, in the respective towns or cities, as designated in this act, shall procure a license from the state dairy and food commissioner, or his authorized agents, and shall pay to said commissioner or his agents the sum of one dollar (\$1). And whoever neglects to procure said license shall be deemed guilty of a misdemeanor and shall be punished for each offense by a fine not exceeding twenty-five dollars (\$25).

SEC. 15. That all moneys received as license fees, or from the sale of any and all goods confiscated by the state dairy and food commissioner, under said act, shall be received and disbursed the same as money appropriated for the use of said dairy and food commission.

SEC. 16. The having in possession by any person or firm of any articles or substances prohibited by this act, shall be considered *prime facie* evidence that the same is kept by such person or firm in violation of the provisions of this act, and the commissioner shall be authorized to seize upon and take possession of such articles or substances, and upon the order of any court which has jurisdiction under this act, he shall sell the same for any purpose other than to be used for food, the proceeds to be placed to the credit of the state dairy and food commissioners' fund.

Section seventeen (17) of said act is hereby amended so as to read as follows:

SEC. 17. The district and municipal courts and all justices of the peace of this state Shall have jurisdiction of all cases arising under this act, and their jurisdiction is hereby extended so as to enable them to enforce the penalties imposed by any or all of the sections hereof.

Section eighteen (18) of said act is hereby amended so as to read as follows:

SEC. 18. In all prosecutions under this act the cost thereof shall be paid in the manner now provided by law, and the rest placed to the credit of the state dairy and food commissioners' fund.

SEC. 19. All acts and parts of acts now in force and inconsistent with this act are hereby repealed.

SEC. 20. This act shall take effect and be in force from and after its passage.

Approved April 20, 1889.

## CHAPTER 11, GENERAL LAWS OF 1891.

(S. F. No. 467.)

## AN ACT RELATING TO THE SALE OF IMITATION BUTTER.

*Be it enacted by the Legislature of the State of Minnesota:*

SECTION 1. Whoever, by himself or his agent, shall sell, expose for sale, or have in his possession with intent to sell, any article or compound made in imitation of butter or as a substitute for butter, and not wholly made from milk or cream, and that is of any other color than bright pink, shall be subject to the payment of a penalty of fifty (50) dollars, and for a second and each subsequent offense, a penalty of one hundred (100) dollars, to be recovered with costs in any court in this State of competent jurisdiction.

SEC. 2. Samples or specimens of any articles in imitation of butter, suspected of being of a spurious character, shall be analyzed or otherwise satisfactorily tested as to color and compounds; and a certificate of the analysis, sworn to by the analyzer, shall be admissible as evidence in all prosecutions under this act.

SEC. 3. The having in possession by any person or firm of any articles or substance prohibited by this act shall be considered *prima facie* evidence that the same is kept by such person or firm in violation of the provisions of this act, and the state dairy and food commissioner shall be authorized to seize upon and take possession of such article or substance, and upon the order of any court which has jurisdiction under this act, he shall sell the same for any purpose other than to be used for food; the proceeds derived from fines and the sale of imitation butter shall be paid into the state treasury to be placed to the credit of the state dairy and food commissioner's fund.

SEC. 4. For the purpose of this act the term butter shall be understood to mean the product usually known by that name, and which is manufactured exclusively from milk or cream or both.

SEC. 5. This act shall take effect and be in force from and after its passage.

Approved April 21, 1891.

## FOOD LAWS.

## CHAPTER 12, GENERAL LAWS OF 1891.

(H. F. No. 1237.)

## AN ACT IN RELATION TO THE MANUFACTURE AND SALE OF LARD AND OF LARD COMPOUNDS AND SUBSTITUTES, AND OF FOOD PREPARED THEREFROM, TO PREVENT FRAUD AND TO PRESERVE THE PUBLIC HEALTH.

*Be it enacted by the Legislature of the State of Minnesota:*

SECTION 1. No person shall within this State manufacture for sale, have in his possession with intent to sell, offer or expose for sale, or sell as lard, any substance not the legitimate and exclusive product of the fat of the hog.

SEC. 2. Every person who manufactures for sale within this State, has in his possession with intent to sell, offers or exposes for sale, or sells as lard, or as a substitute for lard, or an imitation of lard, any mixture or compound which is designed to take the place of lard and which is made from animal or vegetable oils or fats, or any mixture or compound consisting in part of lard, in mixture or combination with animal or vegetable oils or fats, unless the same be branded or labeled as hereinafter required and directed, shall be guilty of a misdemeanor and shall upon conviction be subject to the penalties hereinafter provided in this act.

SEC. 3. Every person who manufactures for sale, has in his possession with intent to sell, offers or exposes for sale, or sells any substance made in the semblance of lard, or as an imitation of lard, or a substitute for lard, and which is designed to take the place of lard, and which consists



of any mixture or compound of animal or vegetable oils or fats other than hog fat in the form of lard, shall cause the tierce, barrel, tub, pail, or package containing the same to be distinctly and legibly branded or labeled in letters not less than one (1) inch in length with the name of the person or firm making the same, together with the location of the manufactory, and the words "Lard Substitute," and immediately following the same in letters not less than one-half ( $\frac{1}{2}$ ) inch in length, with the names and approximate proportions of the several constituents which are contained in the mixture or compound.

SEC. 4. Every person who manufactures for sale, has in his possession with intent to sell, offers or exposes for sale or sells any substance made in the semblance of lard, or as an imitation of lard, or as a substitute for lard, and which is designed to take the place of lard, and which consists of any mixture or compound of lard with animal or vegetable oils or fats, shall cause the tierce, barrel, tub, pail or package containing the same to be distinctly and legibly branded or labeled in letters not less than one (1) inch in length, with the name of the person or firm making the same, together with the location of the manufactory, and the words "Adulterated Lard," and immediately following the same in letters not less than one-half ( $\frac{1}{2}$ ) inch in length with the names and approximate proportions of the several constituents which are contained in the mixture or compound.

SEC. 5. Every dealer or trader who, by himself or his agent, or as the servant or agent of another person, offers or exposes for sale or sells any form of lard substitute or adulterated lard as hereinbefore defined, shall securely affix or cause to be affixed to the package wherein the same is contained, offered for sale or sold, a label, upon the outside and face of which is distinctly and legibly printed in letters not less than one-half ( $\frac{1}{2}$ ) inch in length the words "Lard Substitute" or "Adulterated Lard," and immediately following the same, in letters not smaller than long primer, the name and approximate proportions of the several constituents which are contained in the mixture or compound, and shall furnish to the purchaser at the time of sale a card upon which is distinctly and legibly printed the name of the article as hereinbefore defined, and a list of the several components of the mixture.

SEC. 6. Every person who manufactures for sale, or who offers or exposes for sale or sells, or who serves to guests as keeper of hotel, restaurant, dining-room, or in any other capacity, articles of food which have been prepared, either wholly or in part, with lard substitutes, or adulterated lard as hereinbefore defined, shall at the time of sale furnish to the purchaser a card upon which is distinctly and legibly printed the words, "This food is prepared with lard substitute (or adulterated lard)," or in case no bill of fare is provided, there shall be kept constantly posted upon each of the sides of the dining-room, in a conspicuous position, cards upon the face of which is distinctly and legibly printed in the English language, and in letters of sufficient size to be visible from all parts of the room the words: "Lard substitute (or adulterated lard) used in the preparation of the food used here."

SEC. 7. The having in possession of any lard substitute or adulterated lard as hereinbefore defined, which is not branded or labeled as hereinbefore required and directed, upon the part of any dealer or trader, keeper of hotel, restaurant, baker, or any person engaged in the public sale of such articles, or of food prepared therefrom, shall for the purpose of this act be deemed *prima facie* evidence of intent to sell the same or to use the same in an illegal manner.

SEC. 8. The district and municipal courts and justices of the peace of this state shall have jurisdiction of all cases arising under this act, and their jurisdiction is hereby extended so as to enable them to enforce the penalties imposed by this act.

SEC. 9. It shall be the duty of the State Dairy and Food Commissioner and his assistant, experts, chemists, and agents by him appointed, to enforce the provisions of this act. The said commissioner is hereby authorized and empowered to employ such experts and chemists as may be deemed by him necessary for the proper enforcement of the law; their compensation to be fixed by the commissioner. All charges, accounts and expenses authorized by this act shall be paid by the state treasurer upon a warrant drawn by the state auditor.



SEC. 10. The said commissioner and assistant commissioners, experts, chemists, and others by him appointed, shall have access, ingress and egress to all places of business, factories and buildings where the same is manufactured or kept for sale; they shall also have power and authority to open any package, car or vessel containing such articles which may be manufactured, sold or exposed for sale in violation of the provisions of this act, and may inspect the contents therein and take samples therefrom for analysis. All clerks, bookkeepers, express agents, railroad officials employes or common carriers, shall render them all the assistance in their power, when so requested, in tracing, finding or discovering the presence of any prohibited article named in this act. Any refusal or neglect on the part of such clerk, bookkeeper, express agent, railroad officials, employes or common carriers to render such friendly aid, shall be deemed a misdemeanor, and be punished by a fine of not less than twenty-five (25) dollars or more than fifty (50) dollars for each and every offense.

SEC. 11. In all prosecutions under this act, the costs thereof shall be paid in the manner now provided by law, and such fine shall be paid into the state treasury, and placed to the credit of the state dairy and food commissioners' fund.

SEC. 12. Any person violating any of the provisions of this act shall be deemed to be guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than twenty-five (25) dollars or more than one hundred (100) dollars and costs for each offense, or by imprisonment in the county jail for not less than thirty (30) days or more than ninety (90) days.

SEC. 13. All acts and parts of acts inconsistent with this act are hereby repealed.

SEC. 14. This act shall take effect and be in force from and after its passage.

Approved April 20, A. D. 1891.

## CHAPTER 141.

(S. F. No 657 $\frac{1}{2}$ .)

### AN ACT TO PREVENT FRAUD IN DAIRY PRODUCTS AND TO PRESERVE HEALTH.

*Be it enacted by the Legislature of the State of Minnesota:*

SECTION 1. Any person or firm who shall make or manufacture imitation butter, or butter made of part cream and part caseine and other ingredients under what is known as the "Quinness patent" or process, or any other similar process, whereby the caseine of milk and other ingredients are made to imitate and resemble genuine butter made from cream, shall stamp each package of the same on the top and sides with lamp-black and oil, the words "patent butter" in letters at least one-fourth ( $\frac{1}{4}$ ) of an inch wide and one-half ( $\frac{1}{2}$ ) of an inch long.

Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished for each offense by a fine of not less than twenty-five (\$25) dollars nor more than one hundred (\$100) dollars.

SEC. 2. Whoever sells or offers for sale any imitation or patent butter, as described in section one (1) of this act, shall give to each purchaser of said goods a printed card stating correctly the different ingredients contained in said compound.

Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished for each offence by a fine of not less than twenty-five (\$25) dollars nor more than one hundred (\$100) dollars.

SEC. 3. This act shall take effect on and after its passage.

Approved March 7, 1887.

## CHAPTER 119, GENERAL LAWS OF 1891.

(S. F. No. 393.)

AN ACT TO AMEND CHAPTER SEVEN (7) OF THE GENERAL LAWS OF ONE THOUSAND EIGHT HUNDRED AND EIGHTY-NINE (1889), AN ACT ENTITLED "AN ACT IN RELATION TO THE MANUFACTURE AND SALE OF BAKING POWDERS, SUGARS AND SYRUPS, VINEGARS, LARD, SPIRITUOUS AND MALT LIQUORS, TO PREVENT FRAUD AND TO PRESERVE THE PUBLIC HEALTH." APPROVED APRIL 24, A. D. 1889.  
*Be it Enacted by the Legislature of the State of Minnesota:*

SECTION 1. Every person who manufactures for sale within this state, or offers or exposes for sale, or sells any baking powder, or any mixture or compound intended for use as a baking powder, under any name or title whatsoever, which shall contain, as may appear by the proper tests, any alum, in any form or shape, unless the same be labeled, as hereinafter required and directed, shall be deemed guilty of a misdemeanor, and upon conviction shall, for each offense, be punished by a fine not less than twenty-five (\$25), or more than one hundred dollars (\$100) and costs, or by imprisonment in the county jail not exceeding thirty days.

SEC. 2 Every person making or manufacturing baking powder, or any mixture or compound intended for use as a baking powder, which contains alum in any form or shape, shall securely affix, or cause to be securely affixed, to every box, can or package containing such baking powder or like mixture or compound, a label, upon the outside and face of which is distinctly printed in legible type, no smaller than "Brevier Heavy Gothic caps," the name and residence of the manufacturer, and the following words: "This Baking Powder Contains Alum." Any person violating the provisions of this section shall be deemed guilty of a misdemeanor, and shall, for each offense, be punished by a fine of not less than twenty-five (\$25) nor more than one hundred (\$100) dollars and costs, or by imprisonment in the county jail not to exceed thirty days.

SEC. 3. The having in possession by any person or firm, of any of the articles or substances hereinbefore described, and not labeled as provided by section two (2) of this act, shall be considered *prima facie* evidence that the same is kept by such person or firm in violation of the provisions of this act, and the State Dairy and Food Commissioner, his assistants, experts and chemists, or any one thereof, are hereby authorized to seize upon and take possession of such articles or substances, and upon the order of any court which has jurisdiction under this act, he shall sell the same, giving full notice of the time of such sale, and of the fact that such compound or substances contain alum, and the proceeds of such sale shall be placed to the credit of the State Dairy and Food Commissioner's fund.

SEC. 4. The district and municipal courts and justices of the peace of this State, shall have jurisdiction of all cases arising under this act, and their jurisdiction is hereby extended so as to enable them to enforce penalties imposed by any or all of the sections hereof.

SEC. 5. In all prosecutions under this act, the costs thereof shall be paid in the manner now provided by law, and such fine shall be placed to the credit of the State Dairy and Food Commissioner's fund.

SEC. 8. Every person who manufactures for sale, or offers or exposes for sale, as cider vinegar, any vinegar not the legitimate product of pure apple juice, known as apple cider, or vinegar not made exclusively of said apple cider, or vinegar into which foreign substances, drugs or acids have been introduced, as may appear by proper tests, shall be deemed guilty of a misdemeanor, and for each offence be punished by fine of not less than twenty-five, or more than one hundred dollars and costs.

SEC. 9. Every person who manufactures for sale or offers for sale any vinegar, found upon proper test to contain any preparation of lead, copper, sulphuric acid, or other ingredients injurious to health, shall be deemed guilty of a misdemeanor, and for such offence shall be punished by a fine of not less than ten (10) dollars nor more than one hundred (100) dollars and costs.



SEC. 10. No person, by himself, his servant or agent, or as the servant or agent of any other person, shall sell, exchange, deliver or have in his custody or possession, with intent to sell or exchange, or expose or offer for sale or exchange, any adulterated vinegar, or label, brand or sell as cider vinegar, or as apple vinegar, any vinegar not the legitimate product of pure apple juice, or not made exclusively from apple cider.

SEC. 11. All vinegar shall have an acidity equivalent to the presence of not less than four and one-half per cent. by weight of absolute acetic acid, and in case of cider vinegar shall contain in addition not less than two per cent. by weight of cider vinegar solids upon full evaporation over boiling water, and if any vinegar contains any artificial coloring matter, or less than the above acidity, or, in the case of cider vinegar, if it contains less than the above amount of acidity or of cider vinegar solids, it shall be deemed to be adulterated within the meaning of this act. All manufacturers of vinegar in the State of Minnesota, and all persons who reduce or rebarrel vinegar in this State, and all persons who handle vinegar in lots of one barrel or more, are hereby required to stencil or mark in black figures at least one inch in length, on the head of each barrel of vinegar bought or sold by them, the kind of vinegar contained in each package or barrel, together with the name of the manufacturer and location of the factory where the same is made, and the standard strength of the vinegar contained in the package or barrel, which latter shall be denoted by the number of grains of pure bicarbonate of potash required to neutralize one fluid ounce of vinegar. And any neglect so to mark or stencil each package or barrel, or any false marking of packages or barrels, shall be deemed a misdemeanor, and shall be punished by a fine of not less than twenty-five (25) dollars nor more than one hundred (100) dollars and costs.

SEC. 12. Whoever violates any of the provisions of this act shall be deemed guilty of a misdemeanor and shall be punished by a fine of not less than ten (10) dollars nor more than fifty (50) dollars and costs.

SEC. 13. Whoever adulterates for the purpose of sale, lard with cotton seed oil, or other vegetable oils, or terra alba, or any substance injurious to health, or whoever barter or gives away or sells, or has in his possession with intent to sell, any substance intended for food, which has been adulterated with cotton seed oil, terra alba, or any other substance injurious to health, shall be deemed guilty of a misdemeanor and shall be punished by a fine of not less than twenty-five dollars (\$25) or more than one hundred dollars (\$100) and costs for each offense.

SEC. 14. The having in possession of any adulterated lard, by any dealer or trader, shall for the purpose of this act be deemed *prima facie* evidence of intent to sell the same.

SEC. 15. No person shall within this State manufacture, brew, distil, have or offer for sale, or sell any spirituous or fermented or malt liquors, containing any substance or ingredient not normal or healthful to exist in spirituous, fermented or malt liquors, or which may be deleterious or detrimental to health when such liquors are used as a beverage, and any person violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less twenty-five dollars (\$25) or more than one hundred dollars (\$100) and costs for the first offense, and by a fine of not less than fifty dollars (\$50) or more than one hundred dollars (\$100) and costs, or imprisonment of not less than thirty or more than ninety days, or by both such fine and imprisonment for each subsequent offense.

SEC. 16. It shall be the duty of the State Dairy and Food Commissioner and his assistants, experts and chemists by him appointed, to enforce the provisions of this act. The said commissioner is hereby authorized and empowered to employ such experts and chemists as may be deemed by him necessary for the proper enforcement of this law. Their compensation to be fixed by the commissioner. All charges, accounts and expenses authorized by this act shall be paid by the state treasurer upon a warrant drawn by the state auditor.

SEC. 17. The said commissioner and assistant commissioner, and such experts and chemists as they shall duly authorize for the purpose, shall have access, ingress and egress to all places of business, factories



and buildings where the same is manufactured or kept for sale, cases or vessels used in the manufacture and sale of any spirituous, fermented or malt liquors or any imitation thereof, or any of the substances or articles mentioned in this act. They shall also have power and authority to open any package, car or vessel containing such articles which may be manufactured, sold or exposed for sale in violation of the provisions of this act, and may inspect the contents therein, and may take samples therefrom for analysis. All clerks, bookkeepers, express agents, railroad officials, employes or common carriers, shall render to them all the assistance in their power, when so requested, in tracing, finding or discovering the presence of any prohibited article named in this act. Any refusal or neglect on the part of such clerks, bookkeepers, express agents, railroad officials, employes or common carriers to render such friendly aid, shall be deemed a misdemeanor and be punished by a fine not less than fifty dollars (\$50) or more than one hundred dollars (\$100) for each and every offense.

SEC. 18. The salary of the chemists shall not exceed two thousand dollars (\$2,000) annually.

SEC. 19. This act shall take effect and be in force from and after August 1st, A. D. 1889.

Approved April 24th, 1889.

Approved as amended April 20th, 1891.

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I would call the attention of the wholesale grocers, jobbers, and retail dealers to the Food Law as amended. Every provision of these acts will be rigidly enforced.

A. K. FINSETH,

Dairy and Food Commissioner.

## FORM OF MILK LICENSE.

STATE OF MINNESOTA—DAIRY DEPARTMENT.

*License to Sell Milk.*

SECTION 13. Every person who conveys milk in carriages, carts, or otherwise, for the purpose of selling the same in any city or town of two thousand inhabitants or more, in the State of Minnesota, shall annually, on the first day of May, or within thirty days thereafter, be licensed by the State Dairy Commissioner to sell milk within the limits of said city or town, and shall pay to said Dairy Commissioner the sum of one (\$1.00) dollar each to the use of said Dairy Commission. Licenses shall be issued only in the names of the owners of carriages, carts or other vehicles, and shall for the purpose of this act be conclusive evidence of ownership. No license shall be sold, assigned or transferred. Each license shall record the name, residence, place of business, number of carriages, carts or other vehicles used, the name and residence of every driver, or other persons engaged in selling said milk; and the number of the license. Each Licensee shall, before engaging in the sale of milk, cause his name, the number of his license and his place of business, to be legibly placed on each outer side of all carriages, carts, or other vehicles used by him in the conveyance and sale of milk, and he shall report to the State Dairy Commissioner any change of driver or other person employed by him, which may occur during the term of his license. Whoever, without being first licensed under the provisions of this section, sell's milk or exposes it for sale from carriages, carts or other vehicles, or has it in his custody or possession with intent to sell, and whoever violates any of the provisions of this section, shall for the first offense be punished by a fine of not less than ten (\$10) dollars nor more than fifty (\$50) dollars; for a second offense by a fine of not less than fifty (\$50) dollars nor more than one hundred (\$100) dollars; and for a subsequent offense by a fine of fifty (\$50) dollars and by imprisonment in the county jail for not less than thirty (30) nor more than sixty (60) days. Said letters and figures on carriages, and carts not to be less than four (4) inches in length.

SEC. 14. Every person before selling milk or offering it for sale in a store, booth, stand or market place, in the respective towns or cities, as designated in this act, shall procure a license from the State Dairy Commissioner, or his authorized agent, and shall pay to said Commissioner or his agents the sum of one (\$1) dollar. And whoever neglects to procure said license shall be deemed guilty of misdemeanor, and shall be punished for each offense by a fine not exceeding twenty-five (\$25) dollars.

No.....

This Certifies that.....

of .....is

## LICENSED TO SELL MILK

in.....from May 1st, 1892, to May 1st, 1893.

.....  
Dairy and Food Commissioner.

License Issued.....1893.

## FORM OF AN AGREEMENT BETWEEN PROPRIETORS OF A CHEESE FACTORY AND ITS PATRONS ON THE CO-OPERATIVE PLAN.

THIS AGREEMENT made this.....day of.....189....., by and between .....of....., first party, and .....of....., second party.

WITNESSETH: That the first party for and in consideration of the covenants and agreements hereinafter mentioned, to be performed by said second party, agrees to deliver milk from .....cows to said second party, in his cheese factory at..... at 7:45 a. m. of each day except Sunday. Said first party agrees to observe and follow the rules for the government of cheese factory patrons adopted by the Sheboygan Falls Dairy Board of Trade, as herein set forth; and that the words "they" and "theirs" in said rules shall mean "he" and "his."

1. That they will give their cows free access to salt, or salt them regularly as often as twice a week.
2. That they will provide them with pure water, and as far as possible prevent them from using any other.
3. That their cows will be fed on whey or similar slop.
4. That they will not allow their cows to be worried by dogs or any other brutes, bipeds or quadrupeds.
5. That cows in heat shall be separated from the herd as far as practicable.
6. That they will see that their pails and cans are clean, and use no rusty or wooden ones.
7. That they will keep all foreign substances out of their milk as much as possible, and wash the cows udders before milking.

8. That they will set the milk cans in water at the commencement of milking and have the water in the cooling tubs always higher than the milk.

9. That they will not mix night's and morning's milk unless in case of small quantities and short distance to be carried, and in that case the morning's milk to be cooled before putting in can.

10. That they will have cooling places at a good distance from dung heaps, decaying straw, hog's troughs, etc., and expose as much as possible to pure air, and not suffer pools of stagnant water to collect around them.

11. That they will stir the milk thoroughly during the cooling process.

12. That in perilous times they will cool the night's milk to 60 degrees and the morning's as cool as cool water around the cans will make it, during milking.

13. That they will not close the cans till ready to start for the factory.

14. That they will protect the cans of milk from rain by sheds or coverings above the clear from the top of the cans.

15. That they will bring milk to the factory from nothing but healthy cows, and not until five full days after calving.

16. That if in doubt as to the good qualities of the milk on account of inflamed udders, curdled milk, bad teat, etc., they will try it on their own tables before bringing it to the factory.

17. That if each or any of them knowingly skims, waters, or adulterates milk in any way or saves the strippings, they will forfeit to the other patrons and manufacturer the amount due each or any of them for milk delivered during the month in which the offense shall be committed.

18. That any milk brought to the factory in such condition as the cheese maker shall deem unfit for manufacture shall be rejected.

19. That each person is entitled to four pails of whey to be removed and the cans thoroughly cleaned as soon as taken home.

20. It is mutually agreed between first and second party that first parties are entitled to purchase an amount of cheese at the wholesale price sufficient for his own family use.

21. That they will report accidental or unavoidable variations from these covenants to second party that he may note the result.

22. That each or any of them bringing sour milk two different times shall forfeit to second party twenty pounds of sweet milk for each offense.

23. That they will not fail to deliver milk as aforesaid more than four days from commencement of delivery until the first day of November, 189...

First party further agrees that he will deliver at the depot in..... Minn., the amount of cheese his milk makes.

First party further agrees that the standard test of the milk from his cows shall not be less than 3.5 per cent. fat; under this he shall receive 5 cents less on every hundred pounds of milk for the week or weeks during which it tests under 3.5.

First party further agrees that if he fails to deliver milk, as hereinbefore provided, up to Nov. 1, 189... then and in that case he shall receive for the price of his milk, actually delivered, the average price paid for milk during the month or months in which he delivered said milk, and that no shortage shall be made good to him by reason of said milk not making the guaranteed amount of cheese.

In consideration of the foregoing covenants to be performed by first party, second party agrees to manufacture cheese from the milk so provided for two cents per pound, at..... Minn., and furnish all material and do all the selling of said cheese. Second party further agrees that said first parties shall receive ten pounds of cheese for every one hundred pounds of milk furnished by him except as hereinbefore provided where first party did not continue to deliver milk up to Nov. 1, 189...

Second party further agrees to use all the care, skill and methods usual, requisite or necessary in the manufacture and sale of said cheese, to keep a correct account of all milk received, cheese sold, money received, and make true returns thereof and to give the manufacture and sale of said cheese his personal supervision.

It is further mutually agreed that after the first sixty days from first delivery of milk second party is to pay first party the amount due him on the fifteenth day of each month.

Second party further agrees to pay the first party for said cheese the ruling price paid by the..... as quoted by them at the time said second party sells said cheese.

First party further agrees not to milk his cows less than twice a day, and that each time of milking shall be between the hours of 6 a. m. and 7 p. m. of each and every day.

.....  
.....



## RULES AND SUGGESTIONS FOR CHEESE FACTORY.

## SEC. 3 OF THE DAIRY LAWS OF THE STATE OF MINNESOTA.

No person or persons shall sell, supply or bring to be manufactured, to any butter or cheese manufactory, any milk diluted with water, or any unclean, impure, unhealthy, adulterated or unwholesome milk, or milk from which any cream has been taken, or shall keep back any part of the milk commonly known as "strippings," or shall bring or supply milk to any butter or cheese manufactory that is sour. Whoever violates the provisions of this sections shall be guilty of a misdemeanor, and shall be punished for each offense by a fine of not less than twenty-five (25) or more than two hundred (200) dollars, or not less than one (1) or more than six (6) months' imprisonment, or both such fine and imprisonment.

## RULES AND SUGGESTIONS FOR OUR PATRONS.

These rules and suggestions, if strictly followed, will be of great value to you as well as ourselves. Remember, whatever is worth doing at all, is worth doing well, and doubly so in the dairy. They will help the dairyman to produce more and better milk.

Rule 1. Have good, healthy cows, good, warm stables for them in winter, and plenty of pure water for them to drink. Salt them two or three times per week, or better yet, keep salt where they can get it any time.

Rule 2. Milk must be drawn from the cow in the most cleanly manner, and strained through tin strainers with wire cloth bottom.

Rule 3. The use of wooden pails or any wooden utensil, stone jar or crock that comes in contact with the milk, will not be tolerated under any circumstances whatever. Tin is the only utensil to be used to milk in.

Rule 4. The milk must be thoroughly cooled immediately after it is drawn from the cow, by placing the cans in which the milk is contained in a tub or tank of cold water, deep enough to come up to the height of the milk in the cans, containing at least two or three times as much water as the milk to be cooled. The milk is to be stirred until the animal heat is expelled: never stir your milk with a wooden stick or paddle. The night's milk should be cooled to a temperature of 60 degrees or below, and the morning's to 70 degrees or below. The water will have to be changed from one to three times in hot weather to accomplish this cooling.

Rule 5. The milk must not be kept near any foul yard or stable or any place where injurious odor comes, as it readily absorbs all odors. Great care must be taken at all times to keep the cans and milk free from all dirt and impurities of any kind.

Rule 6. The night's and morning's milk must be kept separate, except the last can filled. It may be mixed if the milk is cooled before mixing.

Rule 7. No milk shall be kept over to be delivered at a subsequent time.

Rule 8. The can covers must be left off until ready to start for the factory.

Rule 9. In case of rain, a wide board, (if you have not an open shed) must be placed over the cans in such manner as to exclude the rain. But be sure and have a space of two or three inches between the top of the cans and board so as to give the milk fresh air.

Rule 10. All pails, cans, strainers, etc., should be washed in the following manner, as soon as possible after being used; first, rinse with cold water, then wash with warm soap suds as warm as can be borne with the hands, using a clean cloth. Be sure that every can, pail, strainer, etc., is thoroughly washed outside and inside. Give the seams *particular attention*. Then scald with water that *boils*, and then set them out in the air to drain until needed. Also see that your cooling tank is kept clean.

Rule 11. See that your cow's udders are clean before milking.

Rule 12. Dipping the fingers down into the milk, or milking into the hand to wet the cow's teats with, is an unpardonable offense, and none but a filthy milker will do it.

Rule 13. All milk should be delivered to the factory before 9 a. m. each day.

Rule 14. No patron shall take away more than two-thirds as much whey as he brings milk to the factory. No patron shall feed sour whey to his cows when his milk is being sent to the factory.

Rule 15. No milk shall be made into cheese which, in the judgment of the foreman, will be a damage to the general interest of the patrons.

Rule 16. Cooling tanks should be large enough so that the milk cans will be three or four inches apart, until your milk is cooled; then set them as close together as you desire.

Rule 17. Wooden pails to milk in, and stone jars to set milk in, is an abomination. No first-class milk, butter or cheese can be produced where they are used, as they absorb milk, cream or greasy substances, and then become rancid. No manner of cleaning or scouring can make them clean enough to receive milk. As proof of this, please smell of an old wooden pail after pouring warm milk out of it.

Rule 18. As the proprietor guarantees a first-class cheese, the first requisite is good milk, and your co-operation, by observing carefully the above rules, will aid him in doing so.

Suggestion No. 1. In summer have plenty of pasturage, free from rank weeds and stagnant water. And for best results feed ground feed once per day. In winter corn and oats, equal parts, ground, then mix half bran. Also feed one quart per day of oil meal, and you have one of the best of rations for cows. For rough feed, very early cut hay, corn fodder, cut early and well cured, makes the best of cow feed. The greatest variety of clean, sweet feed you can feed your cows, the best results will be, as to quantity and quality. Try it.

Suggestion No. 2. Treat your cows kindly, never rush them to and from the pasture. Brutal men, boys and dogs should be banished from the dairy. Keep your cows in the stable on stormy days in winter, and thus save one-third of your feed and keep up your flow of milk. It will pay you to keep your cows warm.

Suggestion No. 3. Keep your pastures free from carrion, and all obnoxious smells away from your cooling tanks.

Suggestion No. 4. Hang these rules up for reference.

Suggestion No. 5. Each person furnishing milk to the factory, is hereby understood as agreeing to the above rules.

### Mr. LAWRENCE ON DAIRYING.

The following address was delivered before the State Dairy Association meeting at its last annual meeting, held at Mankato, Minn., December 10, 11 and 12, 1889, by Mr. J. A. Lawrence, assistant dairy and food commissioner of Minnesota:

*Mr. President and Gentlemen of the Convention:*

Some kind friend has assigned as the subject of my address to you to-day the topic "Dairying." The field to be covered is an extensive one, embracing many departments, each of which are entitled to more consideration at my hands than the time allotted will allow. But I will try and confine myself to the more important branches of my subject.

I desire to call your attention to the feasibility of engaging in dairying. In the first place it is a healthful, honorable and important industry, and is growing daily in importance. Wherever it secures a foothold it means prosperity; a well settled and thriving community. It means good barns, good homes, good farms, under a high state of cultivation, solid capital, churches and school houses, and in fact all that go to make up a first-class community. Hence it calls at once for the best methods to make most of the products raised. Our dairy interest is developing very rapidly, and those not directly interested in the matter, or who have not the means of informing themselves on the subject, would be surprised at the magnitude to which it has grown during the past year in this State. There is no specialty in agriculture that can be properly tested in two or three years' experience, and experience is an important factor in business.

One dairyman will make more clear profit out of his herd with butter at 20 cents per pound than another will at 30 cents, and the increase of his product per cow, owing to selection and good management in regard to feeding, will result in an increase over his neighbor of more than 33 per cent. The one will milk his herd year after year without learning anything regarding the individual merits of his cows. He does not know which ones pay or which ones run him in debt. He is one of those who think a cow is a cow, and that all cows average alike. Every dairyman should set a standard below which no cow should be retained in the permanent herd. This standard should not require the highest production, but rather such average yield as can easily be attained with good food and care. This standard will be the lowest cow in the herd, while the average will be considerably higher. No dairyman who has studied the profit of his business will fix the standard below 3,500 pounds of milk per year. The foundation for a herd should be chosen with great care; they should be chosen from families the members of which should possess in a marked degree the particular qualities which you wish to perpetuate, and thus assure yourself that these qualities have become fixed characteristics and are not accidents. Remember also that the merits of a family should not be measured by the record of a single individual, but by the average of the combined product of a majority of the whole. We often over-estimate the value of a single day's record. They frequently convey an erroneous impression regarding the actual value of a cow. A long continued trial furnishes the only true evidence of its real merit. The cow with a large day's record is a good one to sell, but the one with a large year's record is the one to keep, by all means. Do not be afraid of the cow that eats heartily, but shun the small eater; her food is what produces the milk. If she is a large milk producer she must of necessity be a larger eater; if she maintains her physical condition her milk must be made of the food she eats, plus the amount required to maintain her physical status. The more you give a true dairy type of a cow to eat the better, and which is only borrowed, as she returns the same promptly to her owner in the milk pail. By judicious use of proper food continued for a lengthy period, either quantity or quality of milk can be increased in any dairy breed. I say dairy breed, for in a purely beef breed the increase of feed will only develop flesh. By proper feeding the milk organs are brought into more active exercise, and are thus gradually developed, and in time this development becomes a fixed and permanent characteristic, so allied to nature as in a degree to be transmitted to the offspring. With regard to fast or slow milking, it has been demonstrated beyond denial that the best results are obtained by rapid milking. I will say a few words to the milk shippers: I would recommend that where there is a large shipping point that they join themselves into associations or unions, for the good of all dairymen; let there be no strife, only to excel in the dairy work. The price of milk will be governed by the supply and demand. In some seasons of the year we find that most of our dairymen have a larger amount of milk to ship than in others; that causes an overflow of the milk depots in the city and low prices follow. Shape your business so that you will have about a given amount the year around. This can be done, as it is not necessary that your cows shall all come in at the same time. You cannot take too good care of your cows. There is no more dangerous time in the year than just now. Many good cows are seriously injured by a draught of cold air, not upon the whole body, but upon some very sensitive portion, none of which is more so than the udder, with its delicate construction. Many of the worst forms of garget have been directly traced to the fact that the cow has been allowed to stand where a cold current has had full play. Pure water is a very essential thing for a dairy cow; good well or spring water is the best, but do not allow your cows to drink stagnant water if it can be prevented.

Great care should be taken with milk. When you once think of the foes that beset milk in its normal condition, it is a wonder that it does not sooner fall from its high estate. Some people keep their milk in the same cellar, with their vegetables and meat; this should never occur. Milk should be kept in a room exclusively set apart for its use, as it is



very easily tainted with foreign odors. The milk-room should be light and airy, and so situated that the sun's ray can enter it during part of the day at least, or it will be likely to have a musty smell. Shippers of milk during the summer season should set the night's milk in cold water, and the morning's milk should also be set in cold water and stirred with a paddle for a few minutes until the animal heat has departed.

Good care is an important factor in the improvement of all live stock, especially dairy cows. Regularity in milking and feeding, and above all things gentleness with the dairy cow will go far towards getting all the milk into the pail. A good cow is a very sensitive animal, and as complex and intricate a piece of machinery as is in use in any branch of agriculture; sensitive to every touch, every change, ruined by neglect and improved by care. Drying off cows is getting to be one of the important questions of the day. With the general run of cows there is no trouble but that they will go dry soon enough of their own accord, and remaining so for a long time. But with the improved stock and its strong if not abnormal milk tendencies, it is often difficult to stop the flow of milk between calf and calf. The danger is that the double tax thus imposed will injure the health of the cow, and the wonder is how much farther this thing will be carried without causing a collapse or diseased condition of the mammary system. It is generally conceded that it is better to have a cow go dry at least four weeks before calving, and probably six weeks would be better and none too long. This gives a little rest before nature begins to call for additional milk secretions for the forthcoming offspring. The best way of trying to dry off a cow is a matter on which dairymen differ, but the usual way—the one that naturally suggests itself—is to feed sparingly, not by giving poor food, but by giving less of that which the cow has been accustomed to, and to come down gradually to a bare maintenance ration each day, at the same time begin to drop off the demand for milk, perhaps milking once a day, and then every other day. This is well enough if it works well, but care should be taken when the milking is finally stopped that no milk is allowed to coagulate and become stringy in the teats and udder. Frequent examinations should follow until the fluid secreted has become a mere watery substance. But as neglect to milk clean is known to dry up cows during the milking season, it would seem to be a hint regarding the course to be pursued when it is desired to dry off the mess by not drawing all the milk, but keeping the udder from becoming full would seem to be a hint to nature which she would be prompt to take. The milk, during such operation, however, should not be used for human food. But whatever method for drying off a cow is adopted, great care should be taken to keep inflammation out of the udder, remove all causes for inflammation in the future.

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#### TO RESTRAIN A COW FROM KICKING.

Our illustration shows a method of restraining a kicking cow which is furnished us by Mr. S. B. Strout, Conecuh Co., Alabama, who writes us that he has used it successfully for many years and never known it to fail. It is so simple and easy, and so quickly applied, that the cows do not seem to resent it as they do if tied head and foot, as some seem to think necessary. A small rope or large cord is passed around the body of the cow just in front of the udder and over the top of the hips. It need not be drawn tight, just snug will do; and no cow to which it is applied will ever kick. Sometimes a cow thus tethered will lift a foot as if to kick, but somehow she seems to change her mind, and puts it down again.—*American Agriculturist*.

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Sample of inspector's card used in this department in the collection of food samples for analysis. We use separate cards for each of the various foods under the law:

INSPECTOR'S CARD.

STATE DAIRY AND FOOD COMMISSION.

No. of Sample.....  
Date of Purchase.....  
Character of Sample.....  
Name of Seller.....  
City or Town.....  
No.....Street.....  
Quantity Bought.....  
Delivered to.....  
Remarks.....  
Inspector.....

VINEGAR—ANALYSIS.

Specific Gravity 60 Far.....  
Acetic Acid, per cent. by weight.....  
Solid Residue.....  
With Lead Acetate.....  
With Barium Nitrate.....  
With Silver Nitrate.....  
With Ammonium Oxalate.....  
Remarks.....  
.....  
Chemist.....

CHAPTER 141.

(S. F. No. 657½.)

AN ACT TO PREVENT FRAUD IN DAIRY PRODUCTS AND TO PRESERVE HEALTH.

*Be it enacted by the Legislature of the State of Minnesota:*

SECTION 1. Any person or firm who shall make or manufacture imitation butter, or butter made of part cream and part caseine and other ingredients under what is known as the "Quinness patent or process, or any other similar process whereby the caseine of milk and other ingredients are made to imitate and resemble genuine butter made from cream, shall stamp each package of the same on the top and sides with lamp-black and oil the words, "patent butter," in letters at least one-fourth (¼) of an inch wide and one-half (½) of an inch long.

Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished for each offense by a fine of not less than twenty-five (\$25) dollars, nor more than one hundred (\$100) dollars.

SEC. 2. Whoever sells or offers for sale any imitation or patent butter, as described in section one (1) of this act, shall give to each purchaser of said goods a printed card stating correctly the different ingredients contained in the said compound.

Whoever violates the provisions of this section is guilty of a misdemeanor, and shall be punished for each offense by a fine of not less than twenty-five (\$25) dollars or more than one hundred (\$100) dollars.

SEC. 3. This act shall take effect on and after its passage.

Approved March 7, 1887.

## THE NATIONAL LAW.

AN ACT DEFINING BUTTER, ALSO IMPOSING A TAX UPON AND REGULATING THE MANUFACTURE, SALE, IMPORTATION AND EXPORTATION OF OLEOMARGARINE.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:*

That for the purposes of this act the word "butter" shall be understood to mean the food product usually known as butter, and which is made exclusively from milk or cream, or both, with or without common salt, and with or without additional coloring matter.

SEC. 2. That for the purposes of this act certain manufactured substances, certain extracts, and certain mixtures and compounds, including such mixtures and compounds with butter, shall be known and designated as "oleomargarine," namely: All substances heretofore known as oleomargarine, oleo, oleomargarine oil, butterine, lardine, suine and neutral; all mixtures and compounds of oleomargarine, oleo, oleomargarine oil, butterine, lardine, suine, and neutral; all lard extracts and tallow extracts; and all mixtures and compounds of tallow, beef fat, suet, lard, lard oil, vegetable oil, annatto, and other coloring matter, intestinal fat, and offal fat made in imitation or semblance of butter, or when so made, calculated or intended to be sold as butter or for butter.

SEC. 3. That special taxes are imposed as follows: Manufacturers of oleomargarine shall pay six hundred dollars. Every person who manufactures oleomargarine for sale shall be deemed a manufacturer of oleomargarine.

Wholesale dealers in oleomargarine shall pay four hundred and eighty dollars. Every person who sells or offers for sale oleomargarine in the original manufacturer's packages shall be deemed a wholesale dealer in oleomargarine. But any manufacturer of oleomargarine who has given the required bond and paid the required special tax, and who sells only oleomargarine of his own production, at the place of manufacture, in the original packages to which the tax-paid stamps are affixed, shall not be required to pay the special tax of a wholesale dealer in oleomargarine on account of such sales.

Retail dealers in oleomargarine shall pay \$48. Every person who sells oleomargarine in less quantities than 10 pounds at one time shall be regarded as a retail dealer in oleomargarine. And sections 3232, 3233, 3234, 3235, 3236, 3237, 3238, 3239, 3240, 3241 and 3243 of the Revised Statutes of the United States are, so far as applicable, made to extend to and include and apply to the special taxes imposed by this section, and to the persons upon whom they are imposed; *provided*, that in case any manufacturer of oleomargarine commences business subsequent to the thirteenth day of June in any year, the special tax shall be reckoned from the first day of July in that year, and shall be five hundred dollars.

SEC. 4. That every person who carries on the business of a manufacturer of oleomargarine without having paid the special tax therefor, as required by law, shall, besides being liable to the payment of the tax, be fined not less than \$1,000 and not more than \$5,000; and every person who carries on the business of a wholesale dealer in oleomargarine without having paid the special tax therefor, as required by law, shall, besides being liable to the payment of the tax, be fined not less than \$500 nor more than \$2,000; and every person who carries on the business of a retail dealer in oleomargarine without having paid the special tax therefor, as required by law, shall, besides being liable to the payment of tax, be fined not less than \$50 nor more than \$500 for each and every offense.

SEC. 5. That every manufacturer of oleomargarine shall file with the collector of the internal revenue of the district in which his manufactory is located such notices, inventories and bonds, shall keep such books and render such returns of materials and products, shall put up such signs and affix such number to his factory, and conduct his business under such surveillance of officers and agents as the commissioner of internal revenue.



with the approval of the secretary of the treasurer, may, by regulation, require. But the bond required of such manufacturer shall be with sureties satisfactory to the collector of internal revenue, and in a penal sum of not less than five thousand dollars; and the sum of said bond may be increased from time to time, and additional sureties required at the discretion of the collector, or under instructions of the commissioner of internal revenue.

SEC. 6. That all oleomargarine shall be packed by the manufacturer thereof in firkins, tubs or other wooden packages not before used for that purpose, each containing not less than ten pounds, and marked, stamped and branded as the commissioner of internal revenue, with the approval of the secretary of the treasury, shall prescribe; and all sales made by manufacturers of oleomargarine, and wholesale dealers in oleomargarine shall be in original stamped packages. Retail dealers in oleomargarine must sell only from original stamped packages, in quantities not exceeding ten pounds, and shall pack the oleomargarine sold by them in suitable wooden or paper packages, which shall be marked and branded as the commissioner of internal revenue, with the approval of the secretary of the treasury, shall prescribe. Every person who knowingly sells or offers for sale, or delivers or offers to deliver, any oleomargarine in any other form than in new wooden or paper packages as above described, or who packs in any package any oleomargarine in any manner contrary to law, or who falsely brands any packages or affixes a stamp on any package denoting a less amount of tax than that required by law, shall be fined for each offense not more than one thousand dollars and be imprisoned not more than two years.

SEC. 7. That every manufacturer of oleomargarine shall securely affix by pasting, on each package containing oleomargarine manufactured by him, a label on which shall be printed, besides the number of the manufactory and the district and state in which it is situated, these words: "Notice.—The manufacturer of the oleomargarine herein contained has complied with all the requirements of law. Every person is cautioned not to use either this package again or the stamp thereon again, nor to remove the contents of this package without destroying said stamp, under the penalty provided by law in such cases." Every manufacturer of oleomargarine who neglects to affix such label to any package containing oleomargarine made by him, or sold or offered for sale by or for him, and every person who removes any such label so affixed from any package, shall be fined fifty dollars for each package in respect to which such offense is committed.

SEC. 8. That upon oleomargarine which shall be manufactured and sold, or removed for consumption or use, there shall be assessed and collected a tax of two cents per pound, to be paid by the manufacturer thereof; and any fractional part of a pound in a package shall be taxed as a pound. The tax levied by this section shall be represented by coupon stamps; and the provisions of existing laws governing the engraving, issue, sale, accountability, effacement and destruction of stamps relating to tobacco and snuff, as far as applicable, are hereby made to apply to stamps provided for by this section.

SEC. 9. That whenever any manufacturer of oleomargarine sells, or removes for sale or consumption, any oleomargarine upon which the tax is required to be paid by stamps, without the use of the proper stamps, it shall be the duty of the commissioner of internal revenue, within a period of not more than two years after such sale or removal, upon satisfactory proof, to estimate the amount of tax which has been omitted to be paid, and to make an assessment therefor and certify the same to the collector. The tax so assessed shall be in addition to the penalties imposed by law for such sale or removal.

SEC. 10. That all oleomargarine imported from foreign countries shall, in addition to any import duty imposed on the same, pay an internal revenue tax of fifteen cents per pound, such tax to be represented by coupon stamps as in the case of oleomargarine manufactured in the United States. The stamps shall be affixed and canceled by the owner or importer of the oleomargarine while it is in custody of the proper custom

house officers; and the oleomargarine shall not pass out of the custody of said officers until the stamps have been so affixed and canceled, but shall be put up in wooden packages, each containing not less than ten pounds, as prescribed in this act for oleomargarine manufactured in the United States, before the stamps are affixed; and the owner or importer of such oleomargarine shall be liable to all the penal provisions of this act, prescribed for manufacturers of oleomargarine manufactured in the United States. Whenever it is necessary to take any oleomargarine so imported to any place other than the public stores of the United States, for the purpose of affixing and canceling such stamps, the collector of customs of the port where such oleomargarine is entered shall designate a bonded warehouse to which it shall be taken, under the control of such customs officers as such collector may direct; and every officer of customs who permits any such oleomargarine to pass out of his custody or control without compliance by the owner or importer thereof with the provisions of this section relating thereto, shall be guilty of misdemeanor, and shall be fined not less than one thousand dollars, nor more than five thousand dollars, and imprisoned not less than six months nor more than three years. Every person who sells or offers for sale, any imported oleomargarine, or oleomargarine purporting or claimed to have been imported, not put up in packages and stamped, as provided by this act, shall be fined not less than five hundred dollars nor more than five thousand dollars, and imprisoned not less than six months nor more than two years.

SEC. 11. That any person who knowingly purchases or receives for sale any oleomargarine which has not been branded or stamped according to law shall be liable to a penalty of fifty dollars for each such offense.

SEC. 12. That every person who knowingly purchases or receives for sale any oleomargarine from any manufacturer who has not paid the special tax, shall be liable for each offense to a penalty of one hundred dollars, and to a forfeiture of all articles so purchased or received, or of the full value thereof.

SEC. 13. That whenever any stamped package containing oleomargarine is emptied, it shall be the duty of the person in whose hands the same is to destroy utterly the stamps thereon; and any person who willfully neglects or refuses to do so shall, for each offense, be fined not exceeding fifty dollars, and imprisonment not less than ten days or more than six months. Any person who fraudulently gives away or accepts from another, or who sells, buys or uses for packing oleomargarine, any such stamped package, shall for each such offense be fined not exceeding one hundred dollars, and be imprisoned not more than one year. Any revenue officer may destroy any empty oleomargarine package upon which the tax-paid stamp may be found.

SEC. 14. That there shall be in the office of the commissioner of internal revenue an analytical chemist and a microscopist, who shall each be appointed by the secretary of the treasury, and shall each receive a salary of two thousand five hundred dollars per annum; and the commissioner of internal revenue may, whenever in his judgment the necessities of the service so require, employ chemists and microscopists, to be paid such compensation as he may deem proper, not exceeding in the aggregate any appropriation made for that purpose. And such commissioner is authorized to decide what substances, extracts, mixtures or compounds which may be submitted for his inspection in contested cases are to be taxed under this act; and his decision in matters of taxation under this act shall be final. The commissioner may also decide whether any substance made in imitation or resemblance of butter, and intended for human consumption, contains ingredients deleterious to the public health; but in case of doubt or contest his decisions in this class of cases may be appealed from to a board hereby constituted for the purpose, and composed of the surgeon general of the army, the surgeon general of the navy, and the commissioner of agriculture; and the decision of this board shall be final in the premises.

SEC. 15. That all packages of oleomargarine subject to tax under this act, that shall be found without stamps or marks as herein provided, and all oleomargarine intended for human consumption which contains ingredients adjudged, as hereinbefore provided, to be deleterious to the public health shall be forfeited to the United States. Any person who



shall willfully remove or deface the stamps, marks or brands on packages containing oleomargarine taxed as provided herein shall be guilty of a misdemeanor, and shall be punished by a fine of not less than one hundred dollars nor more than two thousand dollars, and by imprisonment for not less than thirty days nor more than six months.

SEC. 16. Provides for exporting.

SEC. 17. That whenever any person engaged in carrying on the business of manufacturing oleomargarine defrauds or attempts to defraud the United States of the tax on the oleomargarine produced by him, or any part thereof, he shall forfeit the factory and manufacturing apparatus used by him, and all oleomargarine and all raw material for the production of oleomargarine found in the factory and on the factory premises; and shall be fined not less than five hundred dollars nor more than five thousand dollars, and be imprisoned not less than six months nor more than three years.

SEC. 18. That if any manufacturer of oleomargarine, any dealer therein or any importer or exporter thereof, shall knowingly or willingly omit, neglect or refuse to do, or cause to be done, any of the things required by law in carrying on or conducting of his business, or shall do anything by this act prohibited, if there be no specific penalty or punishment imposed by any other section of this act for the neglecting, omitting, or refusing to do, or for the doing or causing to be done, the thing required or prohibited, he shall pay a penalty of one thousand dollars; and if the person so offending be the manufacturer of or a wholesale dealer in oleomargarine, all the oleomargarine owned by him, or in which he has any interest as owner, shall be forfeited by the United States.

SEC. 19. That all fines, penalties and forfeitures imposed by this act may be recovered in any court of competent jurisdiction.

SEC. 20. That the commissioner of internal revenue, with the approval of the secretary of the treasury, may make all needful regulations for the carrying into effect of this act.

SEC. 21. That this act shall go into effect on the nineteenth day after its passage; and all woden packages containing ten or more pounds of oleomargarine found on the premises of any dealer on or after the nineteenth day succeeding the date of the passage of this act shall be deemed to be taxable under section eight of this act, and shall be taxed, and shall have affixed thereto the stamps, marks and brands required by this act or by regulations made pursuant to this act; and for the purposes of securing the affixing of the stamps, marks or brands required by this act, the oleomargarine shall be regarded as having been manufactured and sold, or removed from the manufactory for consumption or use, on or after the day this act takes effect; and such stock on hand at the time of the taking effect of this act may be stamped, marked and branded under special regulations of the commissioner of internal revenue, approved by the secretary of the treasury; and the commissioner of internal revenue may authorize the holder of such packages to mark and brand the same and to affix thereto the proper tax-paid stamps.

Approved Aug. 2, 1886.

The following are sections of the Revised Statutes of the United States referred to in the National Law:

SEC. 3232. No person shall be engaged in or carry on any trade or business hereinafter mentioned until he has paid a special tax therefor in the manner hereinafter provided.

SEC. 3233. Every person engaged in any trade or business on which a special tax is imposed by law shall register with the collector of the district his name or style, place of residence, trade or business, and the place where such trade or business is to be carried on. In case of a firm or company, the names of the several persons constituting the same, and their places of residence shall be so registered.

SEC. 3234. Any number of persons doing business in co-partnership at any one place shall be required to pay but one special tax.

SEC. 3235. The payment of the special tax imposed shall not exempt from an additional special tax the person carrying on a trade or business in any other place than that stated in the collector's register, but nothing herein contained shall require a special tax for the storage of goods, wares or merchandise in other places than the place of business, nor



except as hereinafter provided for the sale by manufacturers or producers of their own goods, wares and merchandise, at the place of production or manufacture, and at their principal office or place of business, provided no goods wares or merchandise shall be kept except as samples at said office or place of business.

SEC. 3236. Whenever more than one of the pursuits or occupations hereinafter described are carried on in the same place by the same persons at the same time, except as hereinafter provided, the tax shall be paid for each according to the rates severally prescribed.

SEC. 3237. All special taxes shall become due on the first day of May, in each year, or on commencing any trade or business on which such tax is imposed. In the former case the tax shall be reckoned for one year; and in the latter case it shall be reckoned proportionately, from the first day of the month in which the liability to a special tax commenced to the first day of May following.

SEC. 3238. All special taxes imposed by law, including the tax on stills or worms, shall be paid by stamps denoting the tax, and the commissioner of internal revenue is required to procure appropriate stamps for the payment of such taxes; and the provisions of section 3312 and 3446 and all other provisions of law relating to the preparation and issue of stamps for distilled spirits, fermented liquors, tobacco and cigars, shall, so far as applicable, extend to and include such stamps for special taxes; and the commissioner of internal revenue shall have authority to make all needful regulations relative thereto.

SEC. 3239. Every person engaged in any business, avocation, or employment, who is hereby made liable to a special tax, except tobacco peddlers, shall place and keep conspicuously in their establishment or place of business all stamps denoting the payment of said special tax; and any person who shall, through negligence, fail to so place and keep said stamps, shall be liable to a penalty equal to the special tax for which his business rendered him liable, and the costs of prosecution; but in no case shall said penalty be less than ten dollars. And where the failure to comply with the foregoing provision of law shall be through willful neglect or refusal, then the penalty shall be double the amount above prescribed; *provided*, that nothing in this section shall in any way affect the liability of any person for exercising or carrying on any trade, business or profession, or doing any act for the exercising, carrying on, or doing of which a special tax is imposed by law, without the payment thereof.

SEC. 3240. Each collector of internal revenue shall, under regulations of the commissioner of internal revenue, place and keep conspicuously in his office, for public inspection, an alphabetical list of the names of all persons who shall have paid special taxes within his district, and shall state thereon the time, place and business for which such special taxes have been paid.

SEC. 3241. When any person who has paid the special tax for any trade or business dies, his wife or child, or executors or administrators or other legal representatives, may occupy the house or premises, and in like manner carry on, for the residue of the term for which the tax is paid, the same trade or business as the deceased before carried on, in the same house and upon the same premises, without the payment of any additional tax. And when any person removes from the house or premises for which any trade or business was taxed to any other place, he may carry on the trade or business specified in the collector's register at the place to which he removes, without the payment of any additional tax; *provided*, that all cases of death, change or removal, as aforesaid, with the name of the successor to any person deceased, or of the person making such change or removal, shall be registered with the collector, under regulations to be prescribed by the commissioner of internal revenue.

SEC. 3243. The payment of any tax imposed by the internal revenue laws for carrying on any trade or business shall not be held to exempt any person from any penalty or punishment provided by the laws of any state for carrying on the same within such state, or in any manner to authorize the commencement or continuance of such trade or business contrary to the laws of such state or in places prohibited by municipal law; nor shall the payment of any such tax be held to prohibit any state from placing a duty or tax on the same trade or business, for state or other purposes.

## APPENDIX.

### LAWS OF OTHER COUNTRIES.

#### ENGLISH MARGARINE ACT 1887.

[CHAP. 29-50 AND 51 VICT.]

An Act for the better Prevention of the Fraudulent sale of Margarine.

(23d August, 1887.)

WHEREAS, it is expedient that further provision should be made for protecting the public against the sale as butter of substances made in imitation of butter, as well as of butter mixed with any such substances;

Be it therefore enacted by the queen's most excellent majesty, by and with the advice and consent of the lords spiritual and temporal, and commons, in this present parliament assembled, and by the authority of the same, as follows:

1. This act shall be cited as the Margarine Act, 1887.

2. This act shall come into operation on the first day of January, one thousand eight hundred and eighty-eight.

3. The word "butter" shall mean the substance usually known as butter, made exclusively from milk or cream, or both, with or without salt or other preservative, and with or without the addition of coloring matter.

The word "Margarine" shall mean all substances, whether compounds or otherwise, prepared in imitation of butter, and whether mixed with butter or not, and no such substance shall be lawfully sold, except under the name of margarine, and under the conditions set forth in this act.

4. Every person dealing in margarine, whether wholesale or retail, whether a manufacturer, importer, or as consignor or consignee, or as commission agent or otherwise, who is found guilty of an offense under this act, shall be liable on summary conviction for the first offense to a fine not exceeding twenty pounds, and for the second offense to a fine not exceeding fifty pounds, and for the third or any subsequent offense to a fine not exceeding one hundred pounds.

5. Where an employer is charged with an offense against this act he shall be entitled, upon information duly laid by him, to have any other person whom he charges as the actual offender, brought before the court at the time appointed for hearing the charge and if, after the commission of the offense has been proved, the employer proves to the satisfaction of the court that he had used due diligence to enforce the execution of this act, and that the said other person had committed the offense in question without his knowledge, consent or connivance, the said other person shall be summarily convicted of such offense, and the employer shall be exempt from any penalty.

6. Every person dealing in margarine in the manner described in the preceding section shall conform to the following regulations: Every package, whether open or closed, and containing margarine, shall be branded or durably marked "margarine" on the top, bottom and sides, in printed capital letters, not less than three-quarters of an inch square; and if such margarine be exposed for sale by retail, there shall be attached to each parcel thereof so exposed, and in such manner, as to be clearly visible



to the purchaser, a label marked in printed capital letters not less than one and a half inches square, "margarine;" and every person selling margarine by retail, save in a package duly branded or durably marked as aforesaid, shall in every case deliver the same to the purchaser in or with a paper wrapper, on which shall be printed in capital letters not less than a quarter or an inch square, "margarine."

7. Every person dealing in, selling, or exposing or offering for sale, or having in his possession for the purpose of sale, any quantity of margarine, contrary to the provisions of this act, shall be liable to conviction for an offense against this act, unless he shows to the satisfaction of the court before whom he is charged that he purchased the article in question as butter, and with a written warranty or invoice to that effect, that he had no reason to believe at the time when he sold it that the articles was other than butter, and that he sold it in the same state as when he purchased it, and in such case he shall be discharged from the prosecution, but shall be liable to pay the costs incurred by the prosecutor, unless he shall have given due notice to him that he will rely upon the above defense.

8. All margarine imported into the United Kingdom of Great Britain and Ireland, and all margarine whether imported or manufactured within the United Kingdom of Great Britain and Ireland, shall, whenever forwarded by any public conveyance, be duly consigned as margarine; and it shall be lawful for any officer of her majesty's custom, or inland revenue, or any medical officers of health, inspector of nuisances, or police constable, authorized under section thirteen of the Sale of Food and Drugs Acts, 1875, to procure samples for analysis if he shall have reason to believe that the provisions of this act are infringed on this behalf, to examine and take samples from any package, and ascertain, if necessary, by submitting the same to be analyzed, whether an offense against this act has been committed.

9. Every manufacturer of margarine in the United Kingdom of Great Britain and Ireland shall be registered by the owner or occupier thereof with the local authority from time to time in such manner as the local government boards of England and Ireland and the secretary of Scotland respectively may direct, and every such owner or occupier carrying on such manufacture in a manufactory not duly registered shall be guilty of an offense under this act.

10. Any officer authorized to take samples under the Sale of Food and Drugs Act, 1875, may, without going through the form of purchase provided by that act, but otherwise acting in all respects in accordance with the provisions of the said act as to dealing with samples, take for the purpose of analysis samples of any butter, or substances purporting to be butter, which are exposed for sale, and are not marked "margarine," as provided by this act; and any such substance not being so marked shall be presumed to be exposed for sale as butter.

11. Any part of any penalty recovered under this act may, if the court shall so direct, be paid to the person who proceeds for the same, to reimburse him for the legal costs of obtaining the analysis, and any other reasonable expenses to which the court shall consider him entitled.

12. All proceedings under this act shall, save as expressly varied by this act, be the same as prescribed by sections twelve to twenty-eight inclusive of the Sale of Food and Drugs Act, 1875, and all officers employed under that act are hereby empowered and required to carry out the provisions of this act.

13. The expression of "local authority" shall mean any local authority authorized to appoint a public analyst under the Sale of Food and Drugs Acts, 1875.

#### GERMAN LAW ON BUTTER SUBSTITUTES, APPROVED JULY 12, 1887.

SECTION 1. The business rooms and other selling and market places at which "margarine" is sold or placed on sale shall show prominently the distinct indelible sign, "sale of margarine." "Margarine" within the meaning of this act shall be those preparations similar to milk butter, the fatty contents of which are not exclusively derived from milk.



SEC. 2. The admixture of butter with margarine or other table fats for the purpose of carrying on trade in those admixtures, as well as in dealing in or placing the same on sale, shall be prohibited. This provision shall not apply to the admixture of milk and cream in the preparation of margarine; *provided, however*, that no more than one hundred parts of milk in weight, or ten parts of cream in weight, in one hundred part in weight of fats not derived from milk, shall find application.

SEC. 3. The vessels and wrappings in which margarine is sold or offered for sale, shall show prominently a distinct and indelible label which contains the word "margarine." If margarine is sold or offered for sale in whole kegs or cases, such label shall also contain the name or the firm of the manufacturers. When sold at retail, margarine must be delivered to the buyer in a wrapper on which is printed the word "margarine," and the name or firm of the seller. If margarine is sold or offered for sale in regularly formed pieces, the same must be in the shape of cubes, bearing the above label, if they are not provided with a wrapper showing such label. The federal council shall have the right of executing the provisions in clauses 1-3 to issue orders to be published in the bulletins of laws of the empire.

SEC. 4. The provisions of this act shall not apply to such products described in section 1 as are not intended for human consumption.

SEC. 5. Violation of the provisions of this act, as well as of the orders of the federal council, to be issued in conformity with section 3, shall be punished by a fine not exceeding 150 marks (\$36), or by imprisonment. For a second offence, a fine of not more than 600 marks (\$144), or imprisonment for not more than three months, shall be imposed.

This provision shall not apply in cases where a period of three years has elapsed since an offender had paid a fine, or such fine had been remitted.

In addition to the penalty, confiscation of such articles as are sold or offered for sale can be made whether said articles belong or do not belong to the convicted parties.

If a prosecution or conviction of any party is not practicable, confiscation of goods may be made without regard to ownership.

SEC. 6. The provisions of the act relative to the traffic in articles of food consumption and in general domestic use, of May 14, 1879 (*Reichs-Gesetz-Blatt*, p. 1451), shall not be affected.

The provisions in sections 16 and 17 of the same shall apply also in case of violation of the provisions of the present act.

SEC. 7. The present act shall take effect on the first of October, 1887.

*Publication of the Chancellor of the German Empire relative to Provisions to Carry out the Act touching the Traffic in Substitutes for Butter, July 26, 1887:*

To carry out the provisions contained in Section 3, clauses 1 and 3, of the act in relation to the traffic in substitutes for butter, of July 12, 1887, the federal council, in conformity with section 3, clause 4, of this act, has adopted the following regulations and rules:

(1) For the marking (as prescribed by section 3, clause 1, of the act relative to the traffic in substitutes for butter, July 12, 1887) of the vessels and exterior coverings in which margarine is sold or offered for sale, the inclosed pattern shall be taken as a model, provided that the length of the frame surrounding the label shall be no greater than five times its height, and is no less than thirty centimetres and no more than fifty centimetres.

(2) The name of the firm or of the manufacturer (section 3, clause 2, of the act) shall be placed immediately over, under, or by the side of the said label.

(3) The label (clauses 1 and 3) shall be attached by branding or painting. In the latter case it must be made with black colors on white or light yellow ground. Up to the first of April, 1888, it shall be permitted to use printed labels, to be pasted on.

(4) The label (sections 1 and 2) shall be placed on the sides of the vessels in at least two opposite places; in case of vessels having a cover, it shall be placed also on the upper surface of the cover, and in the case of casks, kegs, and the like, upon the bottoms.

(5) The requirements of sections 1 and 2, within the meaning of this act, shall apply to the wrappers used in the sale of margarine at retail (section 3, clause 3), provided that the length of the frame shall not be less than fifteen centimetres.

(6) For the marking of the cube-shaped pieces (section 3, clause 3), it is provided that there shall be no restrictions as to the size of the framing; and that it shall be permitted to divide the word "margarine" into halves, to be placed one under the other, and to be connected by hyphens.

VON BOETTCHER.

*Coloring Oleomargarine.*—Consul Mealey, of Munich, transmits the following:

The subject of a law concerning the trade in oleomargarine was referred to a commission of twenty-eight, who have finished their investigations and consultations. The examinations which were made are rather favorable for the use of oleomargarine, and the health department has already acknowledged the value of their conclusions, published on the 22d of March, 1867, concerning oleomargarine. That report says: This product is made in great part from such proper ingredients as are useful in nourishment, namely the fats or greases; and therefore, it is of importance, as it furnishes to the poorer classes a substitute for butter which is cheaper and at the same time nourishing. We think that this want has been supplied in the most satisfactory manner by the manufacturer of artificial butter. And it is offered in the markets in a condition superior to natural butter as far as cleanliness and careful preparation are concerned. Although we can agree with the judgment of the Royal Health Department that oleomargarine is a desirable addition to the food supply, yet the object of the law about the traffic in oleomargarine is to be commended, viz., to abolish the extended adulteration of natural butter with oleomargarine. To accomplish this many propositions have been made about the coloring of oleomargarine so that it will be impossible to substitute oleomargarine for natural butter. In this connection, a discovery made by Dr. Fr. Soxhlet, professor in the Technical High School, and chief of the Agricultural Experimental Station in Munich, is particularly interesting. Starting with the idea that any intense coloring matter would cause a deterioration in oleomargarine, both in delicacy and in nourishing qualities, Professor Soxhlet proposes to add a harmless substance in small quantity which shall in no way change the color, taste or smell, or usefulness of oleomargarine, but which, while it cannot be removed from the oleomargarine, will yet furnish everyone with an easy applied test, so that if only one-tenth of the mixture is oleomargarine it can be at once discovered. The professor recommends as such a substance phenol-phtalein. one gramme for one hundred kilogrammes of oleomargarine.

A piece of oleomargarine as large as a pea, treated thus with the phenol-phtalein, if put on a plate with a drop of common household lye, soda, potash, or ammonia, and rubbed together well, will immediately give out an intense bright red color. A little cigar ashes made wet, rubbed with the oleomargarine, and pressed between folds of white blotting paper, shows a red spot on the blotting paper. The lye and ammonia give out a more intense and lasting red color. The test is as simple as the well known litmus paper test.

Every market master can make hundreds of such examinations in a short time, and every consumer is furnished with an easy and infallible test.

This manner of preparing the oleomargarine with the phenol-phtalein does not affect the artificial butter at any stage of its manufacture, or at any time in its use. The color never comes out uncalled for, and in preparing meals it does not come in contact with strong alkalies, and so does not discolor.

By this new discovery the principal reasons for the prohibition of the manufacture of oleomargarine have been removed.

## DANISH ARTIFICIAL BUTTER BILL.

1. Whoever manufactures artificial butter must produce a written account of the mode of manufacture, and must expose for sale the final product in vessels, the form of which is entirely different from that of the firkins in which butter is usually sold. These vessels must be marked with the word "margarine," in accordance with the instructions issued by the minister of the interior.

2. Those who engage either in the wholesale or retail trade in artificial butter must keep their goods in special vessels. The trade in artificial butter must be carried on in places only which are distinctly indicated by the minister as places where "margarine" may be sold. No genuine butter may be sold in such places. Packages containing margarine must be plainly marked accordingly. No trade in artificial butter may be carried on in markets or from ships.

3. The export of artificial butter in vessels other than those specially made to contain this kind of goods is punished by imprisonment.

4. Importation of the same is also punishable.

5. All documents describing artificial butter shall speak of it as "margarine."

6. The manufacture, sale, importation or exportation of any mixture of butter with artificial butter, oleomargarine or hog's lard, is punishable with imprisonment.

7. It is forbidden, under penalty, to manufacture, sell, export or import, artificial butter which has the usual color of dairy butter.

8. A staff of inspectors is appointed to see that the articles of this law are carried out in Copenhagen and in the provinces.

9. The inspector shall have the right at any time to enter a manufactory of artificial butter, to test the product and to examine the written description of the mode of manufacture described in section 1.

10. The ministry of the interior will appoint a chemical staff to aid the inspectors in their work.

This law took effect May 1, 1887.

## REGULATIONS AFFECTING THE SALE AND EXPORTATION OF ARTIFICIAL BUTTER IN NORWAY.

*"Post och Inrikes Tidningar" of Dec. 30, 1886.*

Each vessel must be marked on its sides with two stamps of the form and size given in a drawing appended to the decree. This drawing consists of the word "margarine" in large letters contained within an oval ring. The stamps, which are placed opposite each other close to the top of the vessel, are to be branded into wooden vessels, and on vessels of other material painted plainly in permanent black color. This decree takes the place of that published on the twentieth of November, 1886.

## THE NEW FRENCH BUTTER AND OLEOMARGARINE LAW.

[March 14, 1887.]

SECTION 1. The repression of frauds in the sale of butters.

*Article 1.* It is forbidden to expose or place in the market for sale, to export or import under the name of butter, margarine, oleomargarine, and, in general, any substance intended as a substitute for butter, including compounds of margarine, fat, oil, and other substances with butter, irrespective of the quantity used in the mixture.

*Art. 2.* Any violation of article 1 is punishable by an imprisonment of from six days to six months, and by a fine of from fifty to 3,000 francs. Concealment of the name of the maker or vendor is to be construed as willful sale.

*Art. 3.* Substances or compounds fraudulently exposed, sold, offered for sale, imported or exported, remaining in the possession of the manufacturer, shall be confiscated, in accordance with article 5 of the law of the twenty-seventh March, 1851.



*Art. 4.* The courts may order that any convictions under article 2 shall be published in any newspapers which they may indicate, or posted up in the places or markets where the offense was committed, as well as on the doors of the house or warehouse of the offender, and also on those of the offices of the mayor of the town in which the offender is resident, the expenses in each case to be borne by the delinquent.

*Art. 5.* On a repetition of the offense within a year following the first conviction the maximum fine will always be inflicted, and the judgment always published and placarded.

**SEC. 2.** The sale, transport, and exportation of margarine, oleomargarine, or edible fats.

*Art. 6.* Every retail dealer in margarine, oleomargarine, or any substances or compounds intended to imitate butter, must inform the intending purchaser that the substance or compound sold by him is not butter, by delivering it in a vessel or wrapper having a legible label, stating that the article is margarine, oleomargarine, or edible fat."

*Art. 7.* Every manufacturer, wholesale dealer, or consignor of margarine, oleomargarine, or similar substances, shall be obliged to place them in casks or receptacles marked in large characters, printed or branded, with the words "margarine, oleomargarine, or edible fats."

*Art. 8.* The manufacturers, dealers, exporters, or consignors of margarine, oleomargarine, or similar substances, must clearly indicate upon the invoice, way-bill, bill of lading, etc., for each consignment of goods of this description, that the articles so forwarded are sold as margarine, oleomargarine, or edible fat.

Every carrier and carrying company by land or water must have this description of goods marked in their books, invoices, and declarations or manifests.

#### RUSSIA.

1. The product obtained from a mixture of fat with butter shall be called margarine fat.

2. Its manufacture shall be liable to an excise duty, or to supplementary patent dues.

3. The extent of the impost shall be determined in concert by the ministers of finances and imperial domains.

4. Margarine fat shall be dyed some bright color, but in no case shall such color be yellow.

5. The vessels [cases, firkins] in which margarine is packed at the manufactory, shall be dyed the same color as the margarine.

6. These vessels shall have clearly marked on them the name of the manufactory, and they shall also bear the inscription "margarine fat."

7. The sale of margarine fat shall not be carried on in the shops where dairy butter is on sale.

8. Shops dealing in margarine fat shall exhibit a signboard bearing an inscription that margarine fat is sold within.

9. Hotels, cook shops, restaurants, bars, and, in general, all public establishments in which food is prepared, shall exhibit in a conspicuous place a notice, and shall also state on their bills of fare that the dishes prepared on the premises are cooked with margarine, if such be used by them in their kitchen.

10. The importation of margarine fat from foreign countries shall be prohibited.

ST. PETERSBURG, June 7, 1887.

## ADDENDA.

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### PETITION AND ORDER.

STATE OF MINNESOTA, }  
 County of Hennepin. } ss. District Court, Fourth District.

STATE OF MINNESOTA.

*vs.*

DAVID DAVIDSON.

On reading and filing the petition of Warren J. Ives as State Dairy Commissioner of Minnesota in the above entitled matter, praying, among other things, for the order of this court, directing and authorizing him, said Ives, to sell and dispose of, pursuant to the provisions of chapter 140 of the General Laws of this State and the year 1887, three hundred and sixty (360) pounds of an oleaginous substance, commonly called oleomargarine, found in the possession of the above named defendant on the ninth day of May, 1887, which possession is allowed to have been illegal and contrary to the provisions of said chapter 140, and said substance being then and there seized and taken possession of by said dairy commissioner, by virtue of his office and pursuant to law; now, therefore, it is hereby ordered that said David Davidson, the above named defendant, show cause, if any he have, before this court, on the twenty-eighth day of February, 1888, at ten o'clock in the forenoon of that day, why the prayer of said petitioner as set forth in said petition should not be granted; and let a copy of this order, also of said petition, be served upon said defendant on or before the eighth day of February, 1888. Dated.

STATE OF MINNESOTA, }  
 County of Hennepin. } ss.

Warren J. Ives, being first duly sworn, deposes and says that he is State Dairy Commissioner of the State of Minnesota, that he has read the annexed petition and knows the contents thereof and that the same is true.

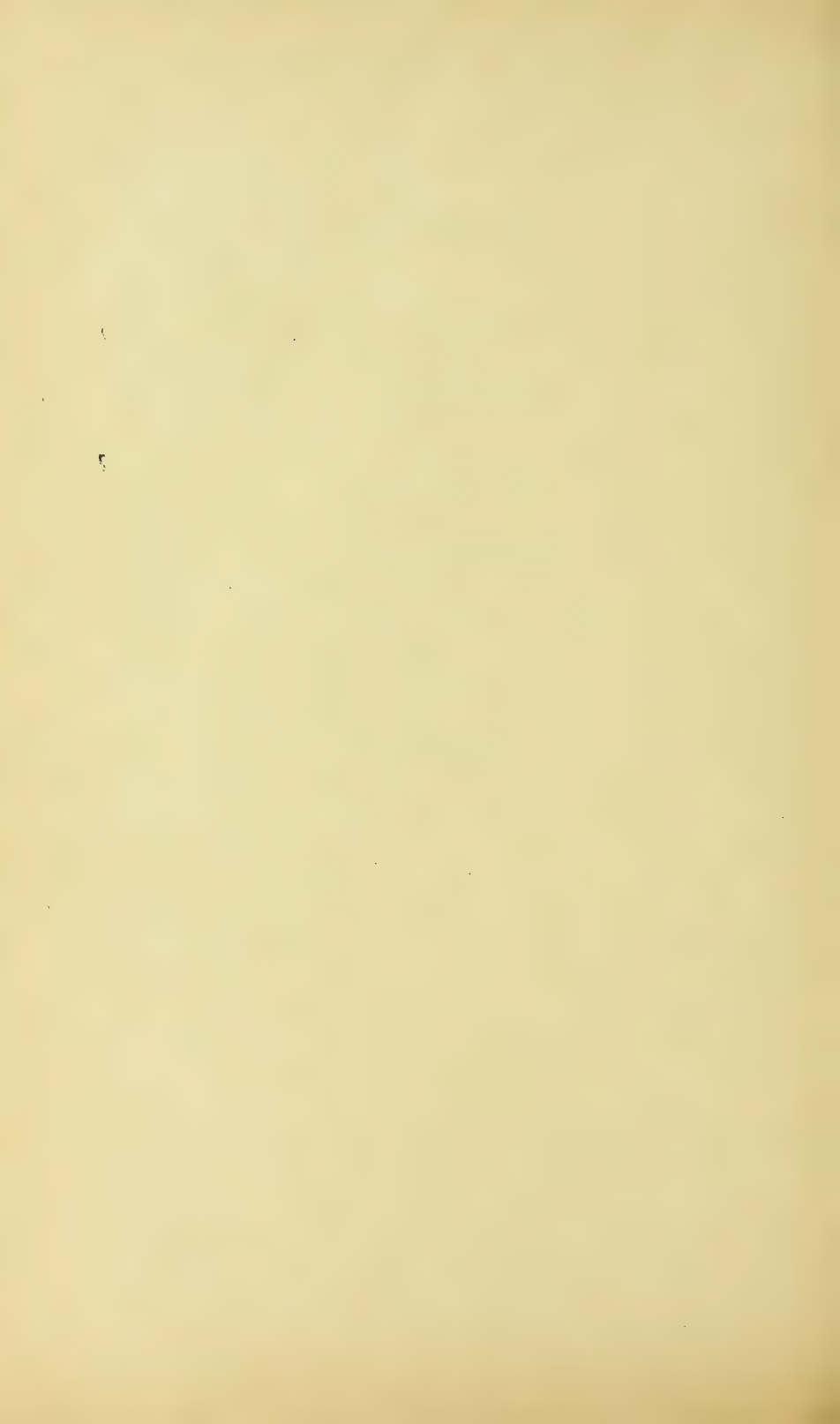
Subscribed and sworn to before me this fourth day of February, 1888.

WARREN J. IVES

VICTOR HJORTSBERG, Notary Public, Minn.







TWENTY-FOURTH ANNUAL REPORT

OF THE

Commissioner of Statistics

OF THE

STATE OF MINNESOTA,

FOR THE YEAR 1892.

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TO THE GOVERNOR.

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MINNEAPOLIS:  
HARRISON & SMITH, PRINTERS.  
1893.

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STATE OF MINNESOTA,  
DEPARTMENT OF STATE,  
BUREAU OF STATISTICS,  
ST. PAUL, January 15, 1893. }

*To His Excellency Knute Nelson, Governor of Minnesota :*

SIR:—Herewith I have the honor to transmit, according to law, the report of the Commissioner of Statistics for the year 1892.

I have the honor to be, very respectfully,

Your obedient servant,

H. STOCKENSTROM,

*Assistant Secretary of State and Commissioner of Statistics.*

## Statistical Publications of Minnesota.

### OLD SERIES.

THE FIRST annual report of the Commissioner of Statistics for 1859, dated 1860, by Joseph A. Wheelock. (Out of print.)

THE SECOND annual report of the Commissioner of Statistics for 1860 and 1861, by Joseph A. Wheelock. (Out of print.)

### NEW SERIES.

THE FIRST annual report of Statistics of Minnesota for 1869, by Pennock Pusey, Assistant Secretary of State and Commissioner of Statistics.

THE SECOND annual report of Statistics of Minnesota for 1870, by same.

THE THIRD annual report of Statistics of Minnesota for 1871, by C. F. Solberg, Assistant Secretary of State and Commissioner of Statistics.

THE FOURTH annual report for 1872, by same.

THE FIFTH annual report for 1873, by same.

THE SIXTH annual report for 1874, by same.

THE SEVENTH annual report for 1875, by same.

THE EIGHTH annual report for 1876, by Dr. J. B. Phillips, Assistant Secretary of State and Commissioner of Statistics.

THE NINTH annual report for 1877, by T. M. Metcalf, Assistant Secretary of State and Commissioner of Statistics. (Out of print.)

THE TENTH annual report for 1878, by John P. Jacobson, Assistant Secretary of State and Commissioner of Statistics.

THE ELEVENTH annual report for 1879, by same.

THE TWELFTH annual report for 1880, by F. S. Christensen, Assistant Secretary of State and Commissioner of Statistics.

THE THIRTEENTH annual report for 1881, by same.

THE FOURTEENTH annual report for 1882, by Oscar Malmros, Assistant Secretary of State and Commissioner of Statistics.

THE FIFTEENTH annual report for 1883, by Oscar Malmros, Assistant Secretary of State and Commissioner of Statistics.

THE SIXTEENTH annual report for 1884, by A. F. Nordin, Assistant Secretary of State and Commissioner of Statistics.

THE SEVENTEENTH annual report for 1885, by A. F. Nordin, Assistant Secretary of State and Commissioner of Statistics.

THE EIGHTEENTH annual report for 1886, by H. Stockenstrom, Assistant Secretary of State and Commissioner of Statistics.

THE NINETEENTH annual report for 1887, by H. Stockenstrom, Assistant Secretary of State and Commissioner of Statistics.

THE TWENTIETH annual report for 1888, by H. Stockenstrom, Assistant Secretary of State and Commissioner of Statistics.

THE TWENTY-FIRST annual report for 1889, by H. Stockenstrom, Assistant Secretary of State and Commissioner of Statistics.

THE TWENTY-SECOND annual report for 1890, by H. Stockenstrom, Assistant Secretary of State and Commissioner of Statistics.

THE TWENTY-THIRD annual report for 1891, by H. Stockenstrom, Assistant Secretary of State and Commissioner of Statistics.

THE TWENTY-FOURTH annual report for 1892, by H. Stockenstrom, Assistant Secretary of State and Commissioner of Statistics.

## CHAPTER I.

# AGRICULTURE.

### RESULT OF THE HARVEST FOR 1891. (BY ASSESSORS.)

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## TOTAL OF ACREAGE AND CROPS FOR 1891 AND TOTAL ACREAGE FOR 1892.

	Total acre- age, 1891.	Total yield, 1891.	Average yield per acre.	Total acre- age, 1892.
Wheat. ....	2,939,343	53,207,022	18.10	3,469,656
Oats.....	1,273,730	44,000,937	34.50	1,582,531
Corn.....	693,295	18,901,583	27.20	643,702
Barley.....	397,208	11,689,887	29.40	524,012
Rye .....	56,242	936,881	16.60	87,257
Buckwheat.....	8,010	102,395	12.70	7,462
Potatoes.....	77,953	8,148,277	104.60	82,178
Beans.....	3,405	31,172	9.10	3,268
Sugar cane, gallons.....	1,673	130,095	.....	2,171
Cultivated hay, tons.....	433,882	568,225	.....	468,667
Flax seed, bushels.....	402,612	4,378,300	.....	243,613
Other products.....	72,801	.....	.....	65,157
Total acres. . . . .	6,360,154	.....	.....	6,979,674

## OTHER AGRICULTURAL PRODUCTS.

Wild hay, tons, 1891.....	1,632,122
Timothy seed, bushels, 1891.....	469,131
Clover seed, bushels, 1891.....	16,632
Apples, bushels, 1891.....	107,975
Grapes, pounds, 1891.....	220,403
Tobacco, pounds, 1891.....	49,591
Honey, pounds, 1891.....	331,247
Maple syrup, gallons, 1891.....	11,242
Maple sugar, pounds, 1892.....	13,840
Wool, pounds, 1891.....	668,550
Wool, pounds, 1892.....	1,265,161
Butter, pounds, 1891.....	27,203,945
Cheese, pounds, 1891.....	1,374,555

TOTAL YIELD OF ALL CROPS FOR THE LAST TEN YEARS FROM 1881.

Crops.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	*1889.	†1889.	1890.	1891.
Wheat, bushels.....	32,947,570	32,176,570	36,042,752	50,475,017	41,253,888	52,492,523	39,070,159	46,660,583	42,334,570	40,298,142	53,207,022
Oats, bushels.....	21,954,126	26,480,842	30,934,393	36,978,079	34,388,213	39,963,607	37,661,424	48,253,709	40,678,486	38,989,943	44,000,937
Corn, bushels.....	14,654,046	16,605,379	5,806,427	16,701,495	16,290,035	18,940,026	17,234,422	22,115,709	19,079,262	18,848,198	18,901,583
Barley, bushels.....	4,215,715	6,109,140	5,770,946	7,001,526	6,653,851	7,535,488	5,216,337	9,105,209	6,803,030	7,932,889	11,689,887
Rye, bushels.....	170,053	308,379	319,647	280,925	219,294	295,928	255,571	579,750	1,001,172	845,207	936,881
Buckwheat, bushels.....	42,847	81,758	85,910	113,756	64,919	56,791	108,704	147,917	219,492	132,702	102,395
Potatoes, bushels.....	3,997,187	5,074,735	7,113,813	6,583,844	5,339,720	5,783,345	4,920,735	6,444,137	7,609,007	6,444,231	8,148,277
Beans, bushels.....	22,294	43,929	34,707	52,940	22,362	23,890	21,235	32,717	43,602	34,206	31,172
Sugar cane syrup, gallons.....	684,016	509,634	159,261	458,152	327,072	240,252	198,774	249,198	220,251	238,560	130,095
Cultivated hay, tons.....	227,452	269,925	417,069	439,481	517,098	586,608	390,100	531,528	454,909	536,851	568,225
Flax seed, bushels.....	435,517	763,117	826,281	1,486,527	2,246,077	1,729,843	1,318,121	1,647,622	2,393,217	3,974,681	4,378,300
Wild hay, tons.....	1,261,089	1,264,597	1,617,307	1,856,921	1,939,939	2,066,527	2,120,526	1,623,749	1,791,063	2,131,138	1,652,122
Timothy seed bushels.....	96,214	200,809	231,744	286,794	288,620	410,884	275,114	234,228	430,304	452,562	469,131
Clover seed, bushels.....	27,715	6,930	21,166	20,828	42,335	197,508	38,480	39,039	66,413	19,694	16,632
Apples, bushels.....	158,058	176,038	120,736	173,357	150,098	123,199	95,198	77,407	64,520	118,660	107,975
Grapes, pounds.....	200,616	203,727	152,678	259,404	198,309	206,200	235,529	661,109	120,174	118,004	320,403
Tobacco, pounds.....	79,631	62,859	14,744	47,472	64,085	65,920	28,931	77,407	27,680	33,621	49,591
Honey, pounds.....	144,162	163,999	254,964	223,943	243,326	341,047	210,593	13,959	746,453	221,353	331,247
Maple syrup, gallons.....	13,418	12,923	11,698	16,771	11,297	11,468	8,378	.....	23,430	8,855	11,242
Maple sugar, pounds.....	49,577	54,512	47,697	35,667	24,076	12,740	8,478	.....	16,280	16,280	13,840
Butter, pounds.....	16,052,020	17,136,788	20,525,357	24,063,631	24,495,074	27,953,028	28,117,172	.....	29,165,137	32,218,310	27,263,945
Cheese, pounds.....	522,456	536,793	615,497	354,694	850,843	1,303,329	1,074,251	.....	1,355,241	1,355,241	3,174,555
Wool, pounds, fall.....	.....	.....	.....	.....	853,281	804,993	710,901	.....	658,484	677,139	668,550
Wool, pounds, spring.....	.....	.....	.....	.....	.....	.....	1,224,251	.....	1,103,987	1,361,725	1,265,161

\*Estimated. †Cy assessors.

## ACREAGE OF THE PRINCIPAL CULTIVATED CROPS FOR ELEVEN YEARS FROM 1880.

CROPS.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	*1889.	†1889.	1890.	1891.
Wheat.....	2,961,842	2,884,160	2,329,969	2,507,209	3,109,874	3,043,683	3,319,707	3,053,987	2,921,437	2,736,519	3,078,787	2,939,343
Oats.....	682,520	728,367	769,133	892,649	1,089,638	1,095,805	1,242,808	1,325,910	1,394,555	1,339,773	1,393,987	1,273,730
Corn.....	422,461	474,030	628,512	530,220	535,133	580,223	506,877	642,477	688,622	704,369	726,493	693,295
Barley.....	118,488	106,917	287,385	285,207	285,252	285,919	338,400	322,612	332,017	290,668	323,281	397,208
Rye.....	12,312	13,091	19,500	20,666	18,237	15,186	17,588	21,814	31,534	51,789	50,202	56,242
Buckwheat....	2,955	3,564	5,650	6,570	7,364	5,627	5,045	6,952	8,558	17,224	10,235	8,010
Potatoes.....	38,254	41,707	47,904	58,980	58,848	54,503	65,540	64,658	80,320	76,896	78,881	77,983
Beans.....	1,538	1,703	3,086	3,539	4,057	2,077	1,704	1,985	2,508	3,656	3,780	3,405
Sugar cane.....	6,914	7,396	6,192	3,834	4,037	3,402	3,527	2,268	4,060	2,999	3,976	1,673
Cultivated hay.....	135,722	171,512	198,183	286,951	338,939	395,523	424,878	385,259	410,474	417,608	428,660	433,882
Flax.....	40,004	73,649	79,547	70,880	126,845	214,873	235,406	167,264	157,540	255,602	409,141	402,612
Miscellaneous products.....	24,844	19,685	22,605	39,080	43,641	41,097	55,801	42,289	102,447	60,899	56,890	72,891
Total acreage.....	4,417,846	4,615,781	4,367,675	4,685,755	5,622,457	5,707,818	6,308,281	6,037,455	6,134,132	5,958,004	6,500,322	6,360,154
Increase over preceding year.....	404,772	167,935	.....	318,060	936,722	85,361	590,463	.....	96,677	.....	551,318	.....

\* Estimated. † By assessors.

## AVERAGE BUSHELS PER ACRE OF CROPS FOR THE LAST FIFTEEN YEARS FROM 1876.

CROPS.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	*1889.	†1889.	1890.	1891.
Wheat.....	9.61	16.78	12.50	11.30	13.30	11.42	13.81	14.37	16.23	13.55	15.80	12.70	15.90	15.30	13.00	18.10
Oats.....	23.04	32.19	38.65	36.42	33.49	30.14	34.44	34.65	33.93	31.38	32.10	28.40	34.60	30.40	29.00	34.50
Corn.....	25.84	33.47	34.90	33.95	31.07	30.91	26.42	11.10	31.32	28.07	31.70	26.80	32.10	27.10	25.00	27.20
Barley.....	22.70	26.38	26.95	24.87	23.21	21.40	23.73	21.76	25.40	23.27	22.80	16.10	22.40	23.40	24.50	29.40
Rye.....	14.21	14.38	15.99	14.98	13.89	12.99	15.81	15.46	15.40	14.44	16.80	11.60	18.30	19.30	16.80	16.60
Buckwheat.....	7.23	11.67	9.99	9.80	10.66	12.02	14.10	13.07	15.44	11.53	11.00	15.70	17.20	12.70	12.90	12.70
Beans.....	7.48	4.70	12.52	11.33	13.06	13.00	14.10	9.80	13.04	10.73	14.00	11.50	12.70	11.90	12.20	9.10
Potatoes.....	75.75	62.00	97.12	103.26	98.87	95.14	105.93	120.71	111.87	97.75	88.20	76.10	80.20	97.60	81.70	104.60

\* Estimated. † By assessors.



PERCENTAGE IN EACH PARTICULAR CROP OF TOTAL CULTIVATED AREA FOR THE LAST FOURTEEN YEARS, FROM 1877.

CROPS.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	*1888.	+1889.	1890.	1891.
Wheat.....	63.29	68.98	63.30	66.59	62.49	53.35	53.51	55.31	53.33	52.64	49.58	47.72	54.89	47.30	46.22
Oats.....	13.54	13.83	14.03	15.34	15.78	17.61	19.05	19.38	19.20	19.70	20.48	22.73	22.49	20.58	20.02
Corn.....	13.45	9.45	9.39	9.49	10.27	14.39	11.32	9.52	10.16	9.02	9.64	11.23	11.82	11.16	10.90
Barley.....	2.95	1.61	2.39	2.66	4.27	5.89	5.66	5.07	5.01	5.36	4.34	5.41	4.96	4.97	6.23
Rye.....	.31	.45	.28	.29	.26	.44	.44	.32	.27	.27	2.61	.51	.86	0.78	0.89
Buckwheat.....	.23	.10	.08	.07	.08	.12	.14	.13	.10	.85	1.11	.13	.25	0.15	0.12
Total per ct. in grain crops .....	93.77	94.42	94.47	94.44	93.15	91.80	90.12	89.73	88.07	87.84	87.76	87.73	86.27	84.94	84.38
Beans.....	.12	.06	.05	.03	.03	.07	.08	1.02	.03	.02	.32	0.04	.06	0.04	0.05
Potatoes.....	1.35	2.08	.92	.86	.90	1.09	1.26	1.05	.95	1.84	1.07	1.17	1.29	1.22	1.22
Sugar cane.....	.07	.08	.12	.15	.16	.14	.08	.08	.06	.05	.37	0.06	.05	0.06	0.04
Cultivated hay.....	3.83	3.55	3.83	3.05	3.71	4.54	6.12	6.03	6.40	8.80	6.38	6.75	7.00	6.58	6.83
Flax.....	.20	.06	.32	.90	1.59	1.83	1.52	2.26	3.76	3.60	2.70	2.56	4.30	6.38	6.33
Miscellaneous products.....	.62	.79	.28	.57	1.45	.53	.82	.78	.73	.85	1.40	1.69	1.03	0.88	1.15
Totals.....	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

\*Estimated.

+By assessor.

THE CROPS OF 1891.

Total cultivated territory of the state.....6,300,154

## WHEAT.

TABLE I.—WHEAT CROP FOR 1891.

Acres sown.....	2,939,343
Bushels produced.....	53,207,022
Average yield per acre.....	18.10
Acres in wheat 1892.....	3,469,656

The aggregate and average yield of Wheat during twenty-three years from 1868.

YEARS.	Acres sown.	Bush's wheat produced.	Average yield per acre.
1868	858,316	15,382,022	17.91
1869	937,029	16,587,621	17.70
1870	1,019,744	15,372,941	15.07
1871	1,096,578	13,467,300	12.28
1872	1,267,309	22,059,375	17.40
1873	1,548,713	26,402,485	17.04
1874	1,681,830	23,938,172	16.03
1875	1,764,109	30,079,300	17.05
1876	1,869,172	17,964,632	9.61
1877	1,829,167	30,693,969	16.76
1878	2,365,775	29,484,503	12.50
1879	2,762,521	31,218,634	11.30
1880	2,961,842	39,399,068	13.30
1881	2,884,160	32,947,570	11.42
1882	5,329,969	32,176,258	13.81
1883	2,507,209	36,042,672	14.37
1884	3,109,874	50,475,017	16.23
1885	3,043,683	41,253,888	13.55
1886	3,319,701	52,492,523	15.80
1887	3,053,987	39,070,159	12.70
1889 estimated	2,921,437	46,660,583	15.90
1889 by assessors	2,736,519	42,334,570	15.30
1890	3,078,787	40,298,142	13.00
1891	2,939,343	53,207,022	18.10

## THE GREATEST WHEAT PRODUCING COUNTIES IN 1891.

The following counties produced over 1,000,000 bushels, to wit:

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Brown	73,471	1,246,705	17.00
Douglas	68,268	1,490,327	21.80
Kandiyohi	74,070	1,217,296	16.40
McLeod	50,354	1,101,211	21.90
Marshall	87,113	1,736,086	19.90
Meeker	71,406	1,071,090	15.00
Nicollet	69,745	1,275,975	18.30
Norman	94,803	1,774,286	18.70
Otter Tail	74,264	1,505,426	20.30
Redwood	64,564	1,150,186	17.80
Renville	106,474	1,773,664	16.70
Sibley	84,003	1,590,818	18.90
Stearns	117,269	1,948,391	16.60
Swift	63,184	1,078,744	17.10
Yellow Medicine	73,484	1,585,007	21.60

## THE GREATEST WHEAT PRODUCING COUNTIES IN 1890.

The following counties produced over 1,000,000 bushels, to wit:

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Clay .....	93,568	1,284,551	13.70
Faribault .....	84,014	1,197,847	14.20
Kandiyohi .....	77,647	1,052,218	14.60
Lac qui Parle .....	84,437	1,039,030	12.30
Marshall .....	88,819	1,056,425	11.80
Norman .....	84,188	1,293,429	15.30
Otter Tail .....	111,065	1,590,142	14.30
Polk .....	222,223	3,002,754	13.50
Renville .....	74,039	1,033,565	14.00
Sibley .....	85,501	1,055,267	12.30
Stearns .....	122,158	1,807,245	14.70
Yellow Medicine .....	77,682	1,049,421	13.10

## THE GREATEST WHEAT PRODUCING COUNTIES IN 1889.

The following counties produced over 1,000,000 bushels, to wit:

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Blue Earth, estimated .....	66,000	1,775,400	26.90
Brown, estimated .....	65,000	1,105,000	17.00
Clay, estimated .....	100,000	1,200,000	12.00
Dakota, estimated .....	123,550	1,235,000	9.90
Douglas, estimated .....	55,000	1,000,000	18.10
Faribault, estimated .....	65,000	1,300,000	20.00
Freeborn, estimated .....	50,000	1,000,000	20.00
Lac qui Parle, estimated .....	82,000	1,312,000	16.00
McLeod, estimated .....	60,000	1,000,000	16.60
Nicollet, estimated .....	65,000	1,300,000	20.00
Otter Tail, estimated .....	108,220	2,164,400	20.00
Polk, estimated .....	160,000	1,600,000	10.00
Pope, estimated .....	580,000	1,044,000	18.00
Renville, estimated .....	88,900	1,333,500	15.00
Sibley, estimated .....	75,000	1,500,000	20.00
Swift, estimated .....	50,435	1,008,700	20.00
Wright, estimated .....	50,000	1,000,000	20.00
Blue Earth, by assessors .....	70,899	1,268,249	17.90
Brown, by assessors .....	66,147	1,209,053	18.30
Douglas .....	59,798	1,123,464	18.80
Lac qui Parle .....	97,905	1,564,586	16.00
McLeod .....	53,531	1,058,982	19.80
Marshall .....	85,479	1,067,155	12.50
Nicollet .....	61,515	1,160,573	18.90
Norman .....	94,051	1,041,707	11.10
Otter Tail .....	104,754	1,707,775	16.30
Polk .....	194,080	3,010,581	17.60
Pope .....	77,148	1,070,236	13.90
Renville .....	118,463	1,604,004	13.50
Sibley .....	77,924	1,505,142	19.30
Stearns .....	91,845	1,537,447	14.60

## THE GREATEST WHEAT PRODUCING COUNTIES IN 1887.

The following produced over 1,000,000 bushels to wit.

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Blue Earth .....	66,292	1,123,720	18.40
Faribault .....	70,951	1,123,958	15.80
Kittson .....	45,114	1,159,886	25.70
Marshall .....	55,983	1,224,885	21.80
Norman .....	84,594	1,162,422	13.70
Otter Tail .....	98,382	1,184,730	11.10
Polk .....	157,640	2,884,897	18.30
Renville .....	100,265	1,459,672	14.50
Sibley .....	68,568	1,163,582	16.90
Stearns .....	101,223	1,118,054	11.00



## THE GREATEST WHEAT PRODUCING COUNTIES IN 1886.

The following produced over 1,000,000 bushels, to wit.

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Blue Earth.....	64,487	1,114,270	17.20
Clay.....	64,685	1,797,666	27.70
Douglas.....	46,957	1,020,854	21.70
Goodhue.....	121,372	1,791,671	14.70
Kandiyohi.....	62,752	1,030,635	16.40
McLeod.....	52,252	1,000,223	17.00
Nicollet.....	61,807	1,025,678	16.50
Norman.....	82,281	1,411,907	17.10
Otter Tail.....	123,881	2,403,782	19.40
Polk.....	140,874	2,132,800	15.10
Renville.....	75,396	1,058,253	14.00
Sibley.....	65,993	1,104,581	16.70
Stearns.....	99,444	1,774,081	17.80
Wright.....	45,876	1,005,351	21.90

## OATS.

TABLE II.—OATS IN 1891.

Acres sown.....	1,273,730
Bushels produced.....	44,000,937
The average yield per acre.....	34.50
Acres in oats in 1892.....	1,382,531

The following table gives the yield and average for twenty-two years from 1869.

YEARS.	Acres.	Bushels.	Average.
1869.....	260,015	9,785,950	37.53
1870.....	317,211	9,895,164	31.19
1871.....	334,798	10,689,484	31.92
1872.....	372,478	12,550,733	33.69
1873.....	368,493	12,544,536	34.04
1874.....	383,233	10,967,072	28.61
1875.....	401,381	13,801,761	34.38
1876.....	458,590	10,566,178	23.04
1877.....	419,903	18,819,630	32.19
1878.....	474,557	18,338,356	38.65
1879.....	567,371	20,667,922	36.42
1880.....	682,520	22,867,932	32.49
1881.....	728,367	21,954,126	30.14
1882.....	769,133	26,480,842	34.44
1883.....	892,649	30,964,303	34.65
1884.....	1,089,638	36,978,079	33.93
1885.....	1,095,805	34,388,213	31.38
1886.....	1,242,808	39,963,607	32.10
1887.....	1,325,910	37,661,424	28.40
1889 estimated.....	1,394,555	48,253,799	34.60
1889 by assessors.....	1,339,773	40,678,486	30.40
1890.....	1,339,987	38,989,943	29.00
1891.....	1,273,730	44,000,937	34.50

The counties producing the largest crop of Oats in 1891 were:

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Fillmore.....	58,729	1,985,234	33.80
Freeborn.....	27,326	1,005,364	36.80
Goodhue.....	44,789	1,584,374	35.40
Martin.....	29,908	1,108,683	37.10
Meeker.....	22,560	1,128,000	50.00
Mower.....	55,076	2,106,084	38.20
Olmsted.....	32,420	1,384,552	42.70

The counties producing the largest crop of Oats in 1890 were:

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Dakota.....	67,854	2,101,470	30.90
Fillmore .....	54,936	1,608,590	29.20
Goodhue .....	42,728	1,382,724	32.30
Mower .....	45,937	1,299,934	28.30
Olmsted.....	35,652	1,147,624	32.10
Polk .....	38,839	1,044,406	26.80
Steele.....	22,896	1,005,567	43.90

The counties producing the largest crop of Oats in 1889 were:

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Faribault, estimated.....	35,000	1,150,000	30.00
Fillmore, ".....	78,102	3,124,080	40.00
Freeborn, ".....	30,000	1,500,000	50.00
Goodhue, ".....	60,000	2,400,000	40.00
Houston, ".....	36,395	1,819,750	50.00
Martin, ".....	50,000	2,000,000	40.00
Mower, ".....	54,800	2,740,000	50.00
Olmsted, ".....	38,801	1,277,666	32.90
Polk, ".....	35,000	1,050,000	30.00
Rice, ".....	36,400	1,820,000	50.00
Sibley, ".....	20,000	1,000,000	50.00
Winona, ".....	39,466	1,775,970	45.00
Blue Earth, by assessors.....	33,958	1,194,895	35.20
Dakota, ".....	76,642	1,354,042	30.70
Fillmore, ".....	59,232	2,305,224	38.90
Goodhue, ".....	50,253	1,950,523	38.80
Houston, ".....	32,519	1,091,091	33.50
Mower, ".....	45,650	1,836,191	40.20
Olmsted, ".....	38,655	1,389,411	36.00
Winona, ".....	32,968	1,346,517	40.80

The counties producing over one million bushels of Oats in 1887 were:

COUNTIES.	Acres sown.	Total bushels.	Bushels per acre.
Blue Earth.....	27,588	1,049,281	38.00
Dakota.....	54,011	1,636,915	30.30
Faribault.....	40,504	1,296,383	32.00
Fillmore.....	66,682	1,159,743	17.30
Mower.....	57,281	1,835,815	32.00
Olmsted.....	38,801	1,161,333	29.90
Polk.....	34,243	1,219,519	35.60

The counties producing the largest crop of Oats in 1886 were:

COUNTIES.	Acres sown.	Total bushels.	Bushels per acre.
Dakota.....	42,217	1,016,425	24.70
Fillmore.....	52,752	1,356,366	25.70
Goodhue.....	34,347	1,295,276	37.70
Mower.....	42,810	1,383,947	32.30
Olmsted.....	36,531	1,247,242	33.80
Otter Tail.....	27,202	1,005,224	36.90
Stearns.....	27,933	1,078,301	38.60

## CORN.

TABLE III.—CORN IN 1891.

Acres planted.....	693,295
Number of bushels.....	18,901,583
The average yield per acre.....	27.20
Acorage, 1891.....	643,702

The following table exhibits the area and yield of Corn for a series of twenty-three years from 1868.

YEARS.	Acres.	Bushels.	Average.
1868.....	129,909	4,849,936	37.33
1869.....	176,482	4,194,965	30.73
1870.....	178,129	5,650,370	31.66
1871.....	200,124	7,076,268	35.35
1872.....	216,455	7,142,245	32.99
1873.....	209,450	6,457,368	30.87
1874.....	256,496	7,340,342	28.64
1875.....	297,316	7,195,581	24.81
1876.....	295,089	7,623,043	25.84
1877.....	388,708	9,151,281	23.49
1878.....	324,174	11,286,545	34.90
1879.....	379,766	12,939,901	33.95
1880.....	422,461	13,125,255	31.07
1881.....	474,030	14,654,646	30.91
1882.....	628,512	16,606,379	26.42
1883.....	530,220	5,886,427	11.10
1884.....	535,133	16,761,495	31.32
1885.....	580,223	16,200,035	28.07
1886.....	596,877	18,940,026	31.70
1887.....	642,477	17,234,422	26.80
1889, estimated.....	688,622	22,115,769	32.10
1889, by assessors.....	704,369	19,079,262	27.10
1890.....	726,493	18,848,198	25.90
1891.....	693,295	18,901,583	27.20

The counties producing the largest crop of Corn in 1891 were:

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Fillmore.....	42,866	1,365,027	31.70
Goodhue.....	22,423	611,720	27.30
Houston.....	27,066	793,692	29.30
Martin.....	20,193	609,716	30.30
Olmsted.....	22,658	649,677	28.70
Winona.....	20,440	633,207	31.00

The counties producing the largest crop of Corn in 1890 were:

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Blue Earth.....	26,991	733,014	21.10
Faribault.....	47,933	798,735	16.60
Fillmore.....	39,495	970,650	24.50
Freeborn.....	31,258	953,039	30.40
Houston.....	27,042	808,085	29.80

The counties producing the largest crop of Corn in 1889 were:

COUNTIES.	Acres.	Bushels.	Average.
Blue Earth, estimated.....	27,000	1,080,000	40.00
Fillmore, estimated.....	42,688	1,280,640	30.00
Goodhue, estimated.....	30,000	1,200,000	40.00
Houston, estimated.....	34,500	1,725,000	50.00
Martin, estimated.....	37,500	1,312,500	35.00
Winona, estimated.....	20,225	1,012,750	50.00
Blue Earth, by assessors.....	36,786	1,117,900	30.40
Houston, by assessors.....	34,098	1,132,872	33.20



The principal Corn producing counties for 1887 were:

COUNTIES.	Acres.	Bushels.	Yield per acre.
Blue Earth.....	27,103	840,513	31.00
Faribault.....	35,094	1,138,656	32.40
Freeborne.....	26,620	1,048,578	29.50
Houston.....	31,932	608,977	19.00
Le Sueur.....	15,830	668,828	42.20
Martin.....	14,239	538,290	37.80
Mower.....	21,798	610,010	27.90

The principal Corn producing counties for 1886 were:

COUNTIES.	Acres.	Bushels.	Yield per acre.
Blue Earth.....	25,906	795,031	30.00
Fillmore.....	37,009	1,042,950	28.10
Freeborn.....	20,954	675,474	32.50
Hennepin.....	16,303	626,464	38.40
Houston.....	26,241	716,184	27.20
Le Sueur.....	15,073	637,441	42.20
Mower.....	20,843	620,545	29.70
Olmsted.....	26,099	843,401	32.30
Winona.....	19,326	690,697	35.70

# BARLEY.

TABLE IV.—BARLEY IN 1891.

Number of acres sown.....	397,208
Number of bushels.....	11,689,887
Average yield per acre.....	29.40
Acreage 1892.....	524,012

By the following table the crop acreage and average yield may be compared with those of the last twenty-four years from 1867:

YEARS.	Acres.	Bushels.	Average.
1867.....	11,862	316,715	26.70
1868.....	18,150	518,500	28.50
1869.....	31,695	851,113	26.85
1870.....	64,766	1,518,686	23.42
1871.....	64,558	1,627,007	25.20
1872.....	56,785	1,495,491	26.33
1873.....	35,501	669,415	18.85
1874.....	29,028	614,545	21.17
1875.....	40,803	1,230,420	30.15
1876.....	70,838	1,608,463	22.70
1877.....	79,334	2,239,650	26.37
1878.....	55,423	1,493,668	26.95
1879.....	96,951	2,423,932	24.87
1880.....	118,480	2,751,638	23.21
1881.....	196,917	4,215,715	21.40
1882.....	257,385	6,109,140	23.73
1883.....	265,207	5,770,946	21.76
1884.....	285,252	7,001,526	24.54
1885.....	285,919	6,653,851	23.27
1886.....	338,400	7,535,488	22.20
1887.....	322,612	5,216,397	16.10
1889 estimated.....	332,017	9,105,209	27.40
1889 by assessors.....	290,668	6,803,030	23.40
1890.....	323,281	7,932,889	24.50
1891.....	297,208	11,689,887	39.40

The prominent counties in the cultivation of Barley in 1891 were:

COUNTIES.	Acres.	Bushels.	Av'ge yield per acre.
Fillmore.....	31,419	716,731	22.80
Goodhue.....	43,632	1,463,611	33.50
Mower.....	31,971	1,169,707	36.60
Olmsted.....	38,858	1,183,524	30.50
Winona.....	38,741	1,148,432	29.60

The prominent counties in the cultivation of Barley in 1890 were:

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Goodhue.....	38,957	941,259	24.10
Mower.....	19,439	568,060	29.20
Olmsted.....	34,770	1,218,439	35.00
Winona.....	34,807	683,224	19.60

The prominent counties in the cultivation of this crop in 1889 were:

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Goodhue, estimated.....	60,000	1,800,000	30.00
Mower, estimated.....	18,000	720,000	40.00
Olmsted, estimated.....	38,146	1,582,040	15.20
Winona, estimated.....	36,777	108,695	35.00
Olmsted, by assessors.....	28,814	979,785	34.00
Winona, by assessors.....	27,539	943,397	34.30

The counties producing the largest crop of Barley in 1887 were:

COUNTIES.	Acres.	Bushels.	Yield per acre.
Goodhue.....	37,759	711,186	18.80
Olmsted.....	38,146	529,128	13.80
Mower.....	23,728	451,013	19.00
Wabasha.....	28,112	412,318	14.00

The counties producing the largest crop of Barley in 1886 were:

COUNTIES.	Acres.	Bushels.	Yield per acre.
Fillmore.....	29,678	619,806	20.80
Goodhue.....	33,850	755,297	22.30
Olmsted.....	37,715	862,641	22.80
Winona.....	28,037	688,448	24.50

RYE.

TABLE V.—RYE IN 1891.

Acres.....	56,242
Bushels produced.....	936,881
Average yield per acre.....	16.60
Acreage 1892.....	87,257

The acreage, bushels produced and average per acre of the rye crop for the last twenty-four years, from 1867, are as follows:

YEARS.	Acres.	Bushels.	Average.
1867.....	1,988	32,763	16.43
1868.....	2,713	52,100	19.02
1869.....	4,428	72,281	16.32
1870.....	3,049	73,375	18.58
1871.....	8,061	130,928	16.24
1872.....	11,365	182,730	16.07
1873.....	6,982	96,887	13.87
1874.....	4,787	58,100	12.15
1875.....	4,345	71,367	16.42
1876.....	5,285	75,122	14.21
1877.....	9,202	132,041	14.38
1878.....	13,813	221,728	15.99
1879.....	11,534	172,887	14.98
1880.....	12,312	170,817	13.89
1881.....	13,091	170,053	12.99
1882.....	19,500	308,373	15.81
1883.....	20,666	319,647	15.46
1884.....	18,237	280,925	15.40
1885.....	15,186	219,194	14.44
1886.....	17,588	295,928	16.80
1887.....	21,844	255,571	11.60
1889 estimated.....	31,534	579,750	18.30
1889 by assessors.....	51,789	1,001,172	19.30
1890.....	50,202	845,207	16.80
1891.....	56,242	936,881	16.60

The following counties produced the largest crop of rye in 1891:

COUNTIES.	Acres.	Bushels.	Average.
Goodhue.....	6,359	113,455	17.80
Sherburne.....	4,313	51,345	11.90
Washington.....	3,270	64,610	19.80

The following counties produced the largest crop of rye in 1890.

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Dakota.....	2,951	49,917	16.90
Goodhue.....	6,090	108,123	17.70
Isanti.....	2,561	35,251	13.70
Rice.....	1,519	30,126	19.80
Sherburne.....	4,400	69,670	15.80
Washington.....	2,600	53,954	27.70



The following counties produced the largest crop of rye in 1889.

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Chisago, estimated.....	1,000	20,000	20.00
Goodhue, estimated.....	4,000	60,000	15.00
Houston, estimated.....	900	22,500	25.00
Rice, estimated.....	1,170	23,400	20.00
Scott, estimated.....	1,600	35,200	22.00
Sherburne, estimated.....	2,000	36,000	18.00
Wadena, estimated.....	1,000	20,000	20.00
Washington, estimated.....	5,000	110,000	22.00
Isanti, by assessors.....	3,302	56,841	17.20
Scott, by assessors.....	3,027	62,837	20.80
Washington, by assessors.....	2,796	60,574	21.30
Winona, by assessors.....	3,115	68,876	22.10

The prominent counties in the cultivation of this crop in 1887 were:

COUNTIES.	Acres.	Bushels.	Yield per acre.
Dakota.....	2,710	26,432	9.70
Goodhue.....	2,267	25,778	11.30
Rice.....	831	14,338	17.20
Scott.....	1,178	19,256	16.30
Washington.....	2,008	24,840	12.30

The prominent counties in the cultivation of this crop in 1886 were:

COUNTIES.	Acres.	Bushels.	Yield per acre.
Blue Earth.....	976	27,030	27.60
Goodhue.....	765	18,232	23.80
Scott.....	1,027	18,600	18.10
Anoka.....	1,255	16,142	12.80
Dakota.....	997	16,013	16.00
Washington.....	709	14,613	20.60

### BUCKWHEAT.

TABLE VI.—BUCKWHEAT IN 1891.

Acres.....	8,010
Bushels.....	102,395
Average yield.....	12.70
Acres 1892.....	7,462

The table following gives the number of bushels raised each year for the last twenty-three years, from 1867.

YEARS.	Acres.	Bushels.	Average.
1867.....	1,102	15,191	13.71
1868.....	1,538	25,292	16.40
1869.....	2,736	46,038	16.88
1870.....	3,818	63,369	16.59
1871.....	3,597	54,152	15.05
1872.....	3,601	49,359	13.70
1873.....	2,685	29,445	10.92
1874.....	2,861	27,623	9.65
1875.....	3,338	42,425	12.70
1876.....	9,240	66,847	7.23
1877.....	6,805	79,448	11.67
1878.....	3,766	37,971	9.99
1879.....	3,380	33,163	9.80
1880.....	3,955	29,736	10.06
1881.....	3,564	42,847	12.09
1882.....	2,650	81,758	14.47
1883.....	6,570	85,910	13.07
1884.....	7,364	113,756	15.44
1885.....	5,627	64,919	11.53
1886.....	5,045	55,791	11.00
1887.....	6,902	108,704	15.70
1889, estimated.....	8,558	147,917	17.20
1889, by assessors.....	17,294	219,492	12.70
1890.....	10,235	132,702	12.90
1891.....	8,010	102,395	12.70

The following counties produced the largest crop of buckwheat in 1891.

COUNTIES.	Acres.	Bushels.	Av. yield per acre.
Fillmore.....	1,185	12,372	10.50
Mower.....	746	11,529	15.50
Rice.....	207	9,821	47.40
Winona.....	619	7,647	12.40

The following counties produced the largest crop of buckwheat in 1890.

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Dakota.....	859	14,491	16.80
Fillmore.....	1,237	10,529	8.50
Mower.....	855	10,541	12.30
Rice.....	495	7,007	14.10
Winona.....	584	9,156	16.50

The following counties produced the largest crop of buckwheat in 1889.

COUNTIES.	Acres.	Bushels.	Average yield per acre.
Goodhue, estimated.....	700	12,000	17.10
Rice, estimated.....	1,050	21,000	20.90
Winona, estimated.....	662	19,860	30.00
Dakota, by assessor.....	1,600	22,845	14.30
Goodhue, by assessors.....	1,950	25,586	13.10

The prominent counties in the cultivation of this crop in 1887 were:

COUNTIES.	Acres.	Bushels.	Yield per acre.
Fillmore.....	736	14,443	19.60
Dakota.....	453	7,258	17.50
Mower.....	646	8,672	13.40
Winona.....	592	9,906	16.70

## POTATOES.

TABLE VII.—POTATOES IN 1891.

Acres.....	77,953
Bushels.....	8,148,277
Average yield.....	104.60
Acreage, 1892.....	82,178

The subjoined table gives the acreage, production and average for a series of twenty-four years from 1867:

YEARS.	Acres.	Bushels potatoes.	Average per acre.
1867.....	17,747	1,788,053	101.32
1868.....	24,475	2,592,686	105.90
1869.....	20,832	1,488,428	71.44
1870.....	19,085	1,372,975	71.94
1871.....	21,429	2,153,536	100.49
1872.....	26,061	3,072,349	117.89
1873.....	26,360	2,196,138	83.31
1874.....	28,219	2,283,107	80.96
1875.....	31,487	3,782,637	120.26
1876.....	32,703	2,477,384	75.75
1877.....	40,770	2,426,002	62.00
1878.....	33,559	3,250,181	97.12
1879.....	37,915	3,915,890	103.26
1880.....	38,254	3,782,243	98.87
1881.....	41,707	3,997,187	95.84
1882.....	47,904	5,074,756	105.90
1883.....	58,930	7,113,813	120.71
1884.....	58,848	6,583,844	111.87
1885.....	54,503	5,339,720	97.75
1886.....	65,540	5,783,335	88.20
1887.....	64,658	4,920,735	76.10
1889, estimated.....	80,320	6,444,137	80.20
1889, by assessors.....	76,896	7,609,097	97.60
1890.....	78,881	6,444,231	81.70
1891.....	77,953	8,148,277	104.60

The following counties produced the largest crop of potatoes in 1891:

COUNTIES.	Acres.	Bushels.
Anoka.....	2,646	289,145
Chisago.....	4,474	562,641
Hennepin.....	6,413	752,867
Isanti.....	4,972	611,973
Meeker.....	2,525	227,250
Washington.....	1,982	249,654

The following counties produced the largest crop of potatoes in 1890:

COUNTIES	Acres.	Bushels.
Anoka.....	2,343	221,080
Chisago.....	3,244	413,219
Dakota.....	5,610	274,040
Hennepin.....	6,160	510,512
Isanti.....	3,662	436,408



The following counties produced the largest crop of potatoes in 1889:

COUNTIES.	Acres.	Bushels.
Blue Earth, estimated.....	2,000	240,000
Chisago, ".....	3,000	240,000
Hennepin, ".....	8,000	720,000
Houston, ".....	1,300	200,000
Polk, ".....	2,600	250,000
Sherburne, ".....	2,500	375,000
Steele, ".....	1,500	250,000
Washington, ".....	2,200	275,000
Anoka, by assessors.....	2,966	303,641
Chisago, ".....	2,658	489,981
Dakota, ".....	3,001	313,974
Hennepin, ".....	6,636	684,201
Isanti, ".....	3,842	477,771
Washington, ".....	2,205	302,555

The counties producing the largest crop in 1887 were:

COUNTIES.	Acres.	Bushels.
Blue Earth.....	2,917	239,625
Dakota.....	2,835	282,744
Hennepin.....	5,674	404,400
Polk.....	2,544	236,651

BEANS.

TABLE VIII—BEANS IN 1891.

Acres.....	3,405
Bushels.....	31,172
Average yield.....	9.10
Acreage, 1892.....	3,268

The bean crop of the State for the last twenty-four years, from 1867, is exhibited by the following table:

YEARS.	Acres.	Bushels.	Average.
1867.....	527	8,020	15.23
1868.....	1,027	13,671	13.00
1869.....	1,829	27,061	15.12
1870.....	1,845	24,950	13.52
1871.....	1,506	19,658	13.01
1872.....	1,482	19,156	12.92
1873.....	1,184	14,246	12.56
1874.....	2,154	15,795	7.33
1875.....	2,543	23,090	9.06
1876.....	1,832	13,996	7.48
1877.....	3,075	14,471	4.70
1878.....	2,280	28,037	12.52
1879.....	2,156	24,434	11.43
1880.....	1,538	20,964	13.66
1881.....	1,703	22,294	13.09
1882.....	3,095	43,929	14.19
1883.....	3,539	34,707	9.80
1884.....	4,057	52,940	13.04
1885.....	2,077	22,302	10.73
1886.....	1,704	23,860	14.00
1887.....	1,985	21,235	30.89
1889, estimated.....	2,568	32,717	12.70
1889, by assessors.....	3,658	43,602	11.90
1890.....	2,789	34,206	12.20
1891.....	3,405	31,172	9.10

The following counties raised the largest bean crop in 1891:

COUNTIES.	Acres.	Bushels.
Goodhue.....	301	3,662
Isanti.....	393	2,997

The following counties raised the largest bean crop in 1890:

COUNTIES.	Acres.	Bushels.
Anoka.....	216	4,352
Isanti.....	293	3,399

The largest crops of beans in 1889 were produced in the following counties:

COUNTIES.	Acres.	Bushels.
Blue Earth, estimated .....	84	2,600
Fillmore, estimated.....	211	2,110
Goodhue, estimated.....	150	1,500
Sherburne, estimated.....	250	3,750
Washington, estimated.....	100	1,500
Anoka, by assessors.....	261	3,597
Goodhue, by assessors.....	387	3,440
Isanti, by assessors.....	288	3,583

The following counties produced the largest crop of beans in 1887:

COUNTIES.	Acres.	Bushels.
Anoka.....	193	1,186
Blue Earth.....	84	2,006
Fillmore.....	185	2,528

## SUGAR CANE.

TABLE IX.—SUGAR CANE IN 1891.

Acres.....	1,673
Gallons.....	130,095
Sugar, pounds.....	3,131
Acreage, 1892.....	2,171

The product and acreage of sugar cane from 1868, for the last twenty-three years are given herewith.

YEARS.	Acres.	Gallons syrup.	Pounds sugar.
1868		81,375	
1869	629	31,191	
1870	728	56,370	
1871	1,242	73,425	
1872	859	78,095	
1873	747	53,226	
1874	1,146	69,509	
1875	1,534	70,479	
1876	1,695	72,489	
1877	2,200	140,153	
1878	3,207	329,660	
1879	5,033	446,946	
1880	6,914	662,837	
1881	7,396	684,066	
1882	6,192	509,634	
1883	3,834	159,261	
1884	4,629	458,152	
1885	3,302	327,072	
1886	3,527	240,252	
1887	2,268	198,774	352
1889, estimated	4,060	249,198	
1889, by assessors	2,999	220,251	79
1890	3,976	238,560	7,111
1891	1,673	130,095	2,171

The largest quantities of syrup in 1891 were produced in the following counties:

COUNTIES.	Acres.	Gallons syrup.
Carver	134	12,843
Goodhue	127	12,966
Nicollet	135	10,180

The largest quantities of syrup in 1890 were produced in the following counties:

COUNTIES.	Acres.	Gallons syrup.
Big Stone	298	22,088
Carver	221	19,893
Hennepin	184	16,382
Nicollet	179	16,210
Wright	312	28,849

The largest quantities of syrup in 1889 were produced in the following counties.

COUNTIES.	Acres.	Gallons syrup.
Blue Earth, estimated	150	17,000
Goodhue, estimated	1,000	60,000
Martin, estimated	300	30,000
Nicollet, estimated	150	15,000
Blue Earth, by assessor	233	23,403
Carver, by assessor	173	18,104
Nicollet, by assessor	139	16,084



The following counties produced the largest quantities of syrup in 1887:

COUNTIES.	Acres.	Gallons syrup.
Blue Earth.....	170	18,185
Le Sueur.....	190	22,287
Martin.....	131	15,352
Nicollet.....	126	12,866

### HAY.

TABLE X AND XII.—CULTIVATED AND WILD HAY IN 1891.

Tons wild hay.....	1,632,122
Acres cultivated.....	435,882
Tons cultivated hay.....	568,225
Acreage, 1892.....	468,667

The hay crop for the last nineteen years of cultivated and wild hay from 1872, was as follows:

YEARS.	WILD HAY.	CULTIVATED HAY.	
	Tons.	Acres.	Tons.
1872.....	743,414	88,990	108,028
1873.....	783,618	104,525	144,712
1874.....	1,006,212	104,107	138,868
1875.....	878,782	47,592	122,813
1876.....	935,961	174,888	135,860
1877.....	974,224	112,056	131,647
1878.....	1,110,241	121,228	155,295
1879.....	1,200,506	145,150	194,964
1880.....	1,263,472	135,722	175,595
1881.....	1,261,089	171,512	227,432
1882.....	1,564,597	198,183	269,925
1883.....	1,617,307	786,951	417,099
1884.....	1,856,921	338,939	439,481
1885.....	1,939,939	365,523	517,093
1886.....	2,060,527	424,878	586,608
1887.....	2,120,525	585,259	390,100
1889, estimated.....	1,623,749	410,474	481,528
1889, by assessors.....	1,791,663	417,608	454,909
1890.....	2,131,138	428,660	536,857
1891.....	1,632,122	435,882	568,225

The following counties raised the largest hay crop in 1891.

COUNTIES.	WILD HAY.	CULTIVATED HAY.	
	Tons.	Acres.	Tons.
Kandiyohi.....	68,856	.....	.....
Lac qui Parle.....	55,000	.....	.....
Martin.....	63,556	.....	.....
Nicollet.....	50,800	.....	.....
Renville.....	50,299	.....	.....
Stearns.....	51,528	.....	.....
Fillmore.....	.....	37,841	49,686
Goodhue.....	.....	43,787	46,881
Houston.....	.....	20,085	25,069
Mower.....	.....	35,946	48,088
Olmsted.....	.....	29,171	45,903
Washington.....	.....	17,236	20,340
Winona.....	.....	25,585	33,932

The following counties raised the largest hay crop in 1890.

COUNTIES.	WILD HAY.	CULTIVATED HAY.	
	Tons.	Acres.	Tons.
Brown.....	51,592		
Faribault.....	122,472		
Freeborn.....	94,709		
Kandiyohi.....	74,532		
Polk.....	72,733		
Pope.....	92,199		
Sibley.....	54,070		
Stearns.....	60,204		
Swift.....	51,321		
Yellow Medicine.....	52,780		
Dakota.....		22,750	25,448
Dodge.....		18,084	25,460
Fillmore.....		35,924	38,693
Goodhue.....		32,088	45,620
Houston.....		21,010	27,267
Mower.....		45,073	47,858
Olmsted.....		26,058	33,743
Winona.....		24,605	28,820

The following counties raised the largest hay crop in 1889.

COUNTIES.	WILD HAY.	CULTIVATED HAY.	
	Tons.	Acres.	Tons.
Faribault, estimated.....	50,000		
Freeborn, estimated.....	50,000	7,000	10,000
Kandiyohi, estimated.....	60,000		
Nicollet, estimated.....	50,000		
Nobles, estimated.....	50,000		
Pope, estimated.....	60,000		
Redwood, estimated.....	55,000		
Renville, estimated.....	70,000		
Swift, estimated.....	60,000		
Goodhue, estimated.....		50,000	60,000
Mower, estimated.....		35,000	35,400
Winona, estimated.....		29,955	59,910
Brown, by assessor.....	57,039		
Cottonwood, by assessor.....	40,817		
Freeborn, by assessor.....	60,751		
Kandiyohi, by assessor.....	60,230		
Lacqui Parle, by assessor.....	40,560		
Martin, by assessor.....	43,015		
Nicollet, by assessor.....	45,719		
Polk, by assessor.....	47,475		
Pope, by assessor.....	45,278		
Redwood, by assessor.....	42,138		
Renville, by assessor.....	63,551		
Sibley, by assessor.....	47,812		
Stearns, by assessor.....	43,198		
Swift, by assessor.....	61,684		
Yellow Medicine, by assessor.....	47,076		
Fillmore, by assessor.....		31,804	38,145
Goodhue, by assessor.....		36,337	42,632
Mower, by assessor.....		37,813	36,823
Olmsted, by assessor.....		30,465	35,368
Winona, by assessor.....		28,281	35,599

Following is a list of the counties raising the largest hay crop in 1887.

COUNTIES.	WILD HAY.	CULTIVATED HAY.	
	Tons.	Acres.	Tons.
Brown.....	51,236		
Faribault.....	88,831		
Freeborn.....	68,826		
Jackson.....	54,228		
Kandiyohi.....	60,144		
Martin.....	68,494		
Nobles.....	54,270		
Polk.....	68,190		
Pope.....	50,167		
Renville.....	66,725		
Stearns.....	50,326		
Swift.....	55,003		
Blue Earth.....		9,073	26,134
Dakota.....		23,011	25,006
Dodge.....		19,053	20,033
Goodhue.....		21,611	23,835
Mower.....		33,247	34,642
Olmsted.....		28,571	25,579

### FLAX.

TABLE XI.—FLAX IN 1891.

Acres.....	402,612
Bushels.....	4,378,300
Acreage 1892.....	249,613

The acreage and bushels of flax seed for the past nineteen years, from 1872, are as follows:

YEARS.	Acreage.	Bushels.
1872.....	12,129	71,752
1873.....	12,114	100,853
1874.....	19,715	109,043
1875.....	16,644	125,932
1876.....	8,191	44,243
1877.....	5,547	40,838
1878.....	2,183	16,982
1879.....	12,966	99,378
1880.....	40,004	397,190
1881.....	73,640	433,517
1882.....	79,547	762,117
1883.....	70,880	826,281
1884.....	126,845	1,486,527
1885.....	214,873	2,246,077
1886.....	235,406	1,739,843
1887.....	167,264	1,318,121
1889, estimated.....	157,540	1,647,622
1889, by assessors.....	255,602	2,293,217
1890.....	409,141	3,974,681
1891.....	402,612	4,378,300

The largest crop of flax was raised in 1891, in the following counties:

COUNTIES.	Acres.	Bushels.
Brown.....	11,854	143,335
Cottonwood.....	14,372	125,762
Dodge.....	14,751	156,617
Fillmore.....	21,188	346,982
Goodhue.....	15,123	148,390
Lincoln.....	14,793	107,875
Martin.....	21,652	217,885
Mower.....	32,759	405,616
Olmsted.....	15,756	209,617
Redwood.....	13,073	126,794
Renville.....	11,429	121,718
Rock.....	10,026	116,593
Watsonwan.....	13,128	150,557



The largest crop of flax was raised in 1890 in the following counties:

COUNTIES.	Acres.	Bushels.
Blue Earth.....	11,485	139,840
Brown.....	8,716	97,173
Cottonwood.....	14,104	133,018
Dakota.....	15,412	110,325
Dodge.....	21,221	215,465
Faribault.....	31,206	221,784
Fillmore.....	17,696	187,308
Freeborn.....	6,901	90,809
Goodhue.....	9,096	111,120
Jackson.....	13,699	119,909
Lincoln.....	13,300	104,006
Martin.....	23,160	214,738
Mower.....	41,906	460,063
Murray.....	14,783	141,714
Nobles.....	15,609	123,309
Olmsted.....	13,496	147,198
Rock.....	13,505	114,306
Watonwan.....	13,184	168,455

The largest crop of flax was raised in the following counties in the year 1889:

COUNTIES.	Acres.	Bushels.
Jackson, estimated.....	9,871	100,000
Martin.....	30,000	300,000
Mower.....	22,000	220,000
Watonwan.....	7,500	112,500
Blue Earth, by assessor.....	10,288	114,911
Dodge.....	11,386	121,129
Jackson.....	13,790	109,709
Mower.....	35,827	372,451
Nobles.....	19,937	123,569
Rock.....	14,392	104,084
Watonwan.....	10,828	111,716

The largest crop of flax was produced in the following counties in 1887:

COUNTIES.	Acres.	Bushels.
Jackson.....	12,048	87,868
Mower.....	16,461	150,531
Murray.....	11,772	88,164
Nobles.....	18,913	130,110
Rock.....	16,723	115,158
Watonwan.....	8,942	74,290

## IMPROVED LANDS.

TABLE XII.—TOTAL CULTIVATED ACREAGE, 1891.

Total cultivated acreage, 1891.....	6,360,154
Total cultivated acreage, 1892.....	6,979,674

Summary of cultivated acreage for twelve years from 1880:

Years.	Acreage cultivated.
1880.....	4,447,845
1881.....	4,615,781
1882.....	4,367,675
1883.....	4,685,735
1884.....	5,622,457
1885.....	5,707,818
1886.....	6,307,281
1887.....	6,037,455
1888.....	6,362,241
1889—estimated.....	6,134,132
1889—by assessors.....	5,958,004
1890.....	6,509,322
1891.....	6,360,154

The following counties had the largest total cultivated acreage in 1891:

Counties.	Acreage.
Fillmore.....	233,268
Goodhue.....	233,305
Lac qui Parle.....	168,620
Mower.....	189,738
Olmsted.....	162,174
Renville.....	152,560
Stearns.....	166,815
Winona.....	152,060

The largest cultivated acreage for 1890 is found in the following counties:

Counties.	Acreage.
Faribault.....	222,453
Goodhue.....	209,848
Polk.....	284,923

The largest cultivated acreage for 1889 is found in the following counties:

Counties.	Acreage.
Fillmore, estimated.....	224,381
Goodhue, estimated.....	235,850
Polk, estimated.....	209,200
Blue Earth, by assessors.....	165,860
Fillmore, by assessor.....	186,080
Goodhue, by assessor.....	208,424
Mower, by assessor.....	161,913
Polk, by assessor.....	262,630
Renville, by assessor.....	164,435

The following counties had the largest total cultivated acreage in 1887 and 1888:

COUNTIES.	Acres. 1887.	Acres. 1888.
Blue Earth.....	143,755	144,612
Dakota.....	159,687	157,303
Dodge.....	103,000	88,944
Faribault.....	153,381	138,679
Fillmore.....	218,273	216,948
Freeborn.....	128,970	131,366
Goodhue.....	194,312	195,222
Houston.....	104,182	109,674
Mower.....	172,978	169,379
Norman.....	106,853	112,621
Olmsted.....	179,468	182,837
Otter Tail.....	132,237	139,335
Polk.....	205,807	230,022
Renville.....	135,242	126,132
Rice.....	112,261	114,587
Sibley.....	101,771	107,110
Stearns.....	147,080	163,790
Wabasha.....	115,832	117,007
Winona.....	156,294	155,781

## GRASS SEEDS.

TABLE XIII.—GRASS SEEDS, 1891.

Timothy seed produced, bushels.....	469,131
Clover seed produced, bushels.....	16,632

The product of this crop since 1871 has been as follows:

YEARS.	Timothy, bushels.	Clover, bushels.
1871	15,823	2,588
1872	15,228	2,348
1873	40,022	1,546
1874	46,263	5,651
1875	31,576	4,861
1876	83,379	5,041
1877	42,559	8,807
1878	24,228	7,558
1879	30,376	18,460
1880	60,940	8,371
1881	96,214	27,715
1882	200,809	6,930
1883	281,744	21,166
1884	286,704	20,828
1885	288,620	43,325
1886	410,864	107,508
1887	275,114	38,480
1889, estimated	234,228	39,039
1889, by assessors	430,304	66,413
1890	452,562	19,694
1891	469,131	16,632

The following counties produced the largest crop of timothy and clover seed in 1891:

COUNTIES.	Timothy, bushels.	Clover, bushels.
Dodge	27,096	.....
Fillmore	55,133	3,162
Mower	195,138	.....
Olmsted	40,415	.....
Rice	.....	1,537
Winona	17,350	.....

The following counties produced the largest crop of timothy and clover seed in 1896:

COUNTIES.	Timothy, bushels.	Clover, bushels.
Dodge	45,790	.....
Fillmore	80,565	5,230
Mower	107,250	3,560
Olmsted	74,737	1,310
Winona	25,701	952
Dakota	.....	.....

The following counties produced the largest crop of timothy and clover seed in 1889:

COUNTIES.	Timothy, bushels.	Clover, bushels.
Fillmore, estimated	32,197	4,128
Mower, estimated	50,000	5,000
Norman, estimated	30,000	2,000
Olmsted, estimated	49,704	5,235
Steele, estimated	.....	2,000
Washington, estimated	.....	5,000
Winona, estimated	24,000	3,000
Dodge, by assessors	38,044	5,086
Fillmore, by assessors	63,765	7,511
Mower, by assessors	135,405	10,579
Olmsted, by assessors	73,502	6,626
Winona, by assessors	25,122	5,117



The following counties produced the largest crop of timothy and clover seed in 1887:

COUNTIES.	Timothy, bushels.	Clover, bushels.
Dodge.....	35,146	.....
Fillmore.....	37,806	4,497
Mower.....	55,719	5,329
Olmsted.....	55,226	5,235
Winona.....	12,631	.....
Dakota.....	.....	2,213
Rice.....	.....	2,479
Steele.....	.....	2,311

## APPLES.

TABLE XIV.—APPLES IN 1891.

Apple trees growing, 1891.....	348,357
Apple trees bearing, 1891.....	145,285
Apples produced, bushels, 1891.....	107,975

Summary of apple trees growing, apple trees bearing and bushels produced for the last eighteen years.

YEARS.	Apple trees growing.	Apple trees bearing.	Apples, bushels.
1874.....	3,742,479	114,474	36,082
1875.....	889,874	149,039	55,555
1876.....	798,258	153,138	111,538
1877.....	1,151,279	156,189	45,745
1878.....	1,219,324	203,492	89,922
1879.....	1,121,779	269,186	124,261
1880.....	1,160,240	299,319	147,803
1881.....	960,889	275,796	158,058
1882.....	895,114	299,981	176,038
1883.....	889,979	360,451	120,736
1884.....	887,031	278,540	173,357
1885.....	779,699	301,455	150,098
1886.....	474,258	188,955	123,199
1887.....	351,531	142,100	95,198
1888.....	358,748	136,034	.....
1889, estimated.....	432,044	119,443	77,407
1889, by assessors.....	301,538	117,300	64,520
1890.....	361,243	141,345	118,660
1891.....	348,357	145,285	107,975

The following counties produced the largest crop of apples in 1891:

COUNTIES.	Trees growing.	Trees bearing.	Apples, bushels.
Fillmore.....	29,710	17,579	9,818
Houston.....	13,301	7,715	10,334
Olmsted.....	18,260	10,932	8,408
Winona.....	25,523	10,342	14,220

The following counties produced the most apples in 1890:

COUNTIES.	Trees growing.	Trees bearing.	Apples, bushels.
Goodhue.....	21,166	10,415	10,454
Olmsted.....	15,871	10,185	9,529
Winona.....	22,564	10,955	12,444

The following counties produced the most apples in 1889:

COUNTIES.	Trees growing.	Trees bearing.	Apples. bushels.
Dakota, estimated .....	25,850	18,690	5,680
Houston, estimated .....	8,100	4,700	5,000
Olmsted, estimated .....	20,643	11,880	11,655
Winona, estimated .....	17,040	10,577	15,865
Fillmore, by assessor .....	20,456	10,890	7,625
Houston, by assessor .....	8,579	4,268	6,411
Olmsted, by assessor .....	26,055	8,680	5,855
Winona, by assessor .....	22,151	12,285	12,151

The best apple producing counties in 1887 were:

COUNTIES.	Trees growing.	Trees bearing.	Apples. bushels.
Fillmore .....	23,080	9,602	6,727
Goodhue .....	17,145	7,309	5,747
Olmsted .....	20,643	11,880	11,655
Wabasha .....	9,218	5,765	5,593
Winona .....	17,038	7,933	9,989

### GRAPES.

TABLE XV.—GRAPES IN 1891.

Number of bearing vines, 1891 .....	63,751
Pounds produced, 1891 .....	320,403

Summary of grape vines and pounds produced for the last eighteen years, from 1874.

YEARS.	Grape vines in bearing.	Grapes. pounds.
1874 .....	36,145	114,922
1875 .....	45,208	122,237
1876 .....	36,060	69,353
1877 .....	40,873	101,973
1878 .....	40,748	126,763
1879 .....	63,427	135,086
1880 .....	52,777	141,731
1881 .....	49,327	200,616
1882 .....	62,446	203,727
1883 .....	59,226	152,678
1884 .....	64,939	259,404
1885 .....	173,357	198,309
1886 .....	89,876	206,200
1887 .....	76,474	235,529
1888 .....	76,425	.....
1889, estimated .....	88,250	661,109
1889, by assessors .....	62,004	120,874
1890 .....	66,999	185,004
1891 .....	63,751	320,403

The following counties produced the most grapes in 1891.

COUNTIES.	Vines bearing.	Grapes. pounds.
Blue Earth .....	931	4,475
Carver .....	3,466	9,945
Fillmore .....	1,248	4,644
Goodhue .....	1,659	6,835
Hennepin .....	6,403	35,835
Houston .....	14,976	132,531
Olmsted .....	3,170	4,517
Washington .....	1,744	4,016
Winona .....	3,413	14,506

The most grapes in 1890 were produced in the following counties:

COUNTIES.	Vines bearing.	Grapes pounds.
Blue Earth.....	1,015	9,066
Carver.....	2,939	6,885
Dakota.....	2,493	6,025
Hennepin.....	10,885	39,335
Houston.....	16,609	55,504
Scott.....	2,005	4,088
Winona.....	5,998	9,460

The most grapes in 1889 were produced in the following counties:

COUNTIES.	Vines bearing.	Grapes pounds.
Blue Earth, estimated.....	6,000	14,000
Hennepin, estimated.....	30,000	50,000
Houston, estimated.....	13,400	13,400
Olmsted, estimated.....	2,894	10,430
Winona, estimated.....	3,790	10,000
Hennepin, by assessors.....	12,242	24,415
Houston, by assessors.....	12,146	37,817

The following counties produced the most grapes in 1887:

COUNTIES.	Vines bearing.	Grapes pounds.
Blue Earth.....	5,980	12,000
Dakota.....	3,364	14,147
Hennepin.....	13,700	35,895
Houston.....	10,850	38,549
Olmsted.....	2,894	10,430
Scott.....	2,549	11,108
Washington.....	3,533	10,320
Winona.....	3,791	12,925



# MISCELLANEOUS.

## TOBACCO.

TABLE XV.—TOBACCO IN 1891.

Pounds produced..... 49,591

The product of this crop since 1868 has been as follows:

YEARS.	POUNDS.	YEARS.	POUNDS.
1868.....	5,998	1880.....	48,437
1869.....	11,289	1881.....	79,631
1870.....	20,573	1882.....	62,869
1871.....	37,050	1883.....	14,744
1872.....	42,788	1884.....	47,472
1873.....	28,324	1885.....	64,085
1874.....	22,557	1886.....	65,920
1875.....	41,679	1887.....	28,931
1876.....	39,732	1889—estimated.....	13,959
1877.....	38,809	1889—by assessors.....	27,689
1878.....	75,634	1890.....	33,621
1879.....	65,089	1891.....	49,591

## FARMS.

TABLE XVI.—FARMS, 1892.

Number of farms ..... 92,917  
Of which are new ..... 1,317

Total numbers of farms from 1880 to 1892:

YEARS.	New farms during year.	Total No. of farms.
1880.....	6,823	74,888
1881.....	1,758	81,089
1882.....	1,349	79,972
1883.....	1,863	80,596
1884.....	1,609	90,564
1885.....	1,889	95,693
1886.....	1,592	98,492
1887.....	1,056	98,247
1888.....	1,879	94,458
1890.....	1,043	95,501
1891.....	1,207	100,622
1892.....	1,317	92,917

The largest numbers of farms in 1892 were found in the following counties:

Douglas ..... 1,882  
Mower..... 1,820  
Olmsted..... 1,822  
Rice ..... 1,856  
Stearns..... 2,148  
Winona..... 1,878  
Wright..... 1,937

The largest numbers of farms in 1891, were found in the following counties:

Blue Earth.....	2,869
Faribault.....	2,340
Hennepin.....	2,346
Mower.....	2,296
Otter Tail.....	2,961
Polk.....	4,444
Rice.....	2,195
Stearns.....	2,682
Wright.....	2,874

The largest number of farms in 1890, were to be found in the following counties:

Blue Earth.....	2,864
Faribault.....	2,349
Fillmore.....	2,833
Freeborn.....	2,131
Goodhue.....	2,137
Hennepin.....	2,336
Mower.....	2,266
Otter Tail.....	2,966
Polk.....	3,865
Rice.....	2,181
Stearns.....	2,659

The largest number of farms in 1888, were to be found in the following counties:

Blue Earth.....	2,325
Faribault.....	2,347
Fillmore.....	2,833
Goodhue.....	2,137
Hennepin.....	2,211
Mower.....	2,133
Otter Tail.....	2,941
Polk.....	3,517
Rice.....	2,108
Stearns.....	2,615

## DAIRY PRODUCTS.

TABLE XVII.—COWS AND DAIRY PRODUCTS IN 1891.

(From assessors' report.)

Number of milch cows.....	424,881
Pounds of butter produced.....	27,203,945
Pounds of cheese produced.....	1,374,555
Number of milch cows, 1892.....	412,230

Summary of dairy products for the past twenty-one years:

YEARS.	Number of cows.	Pounds of butter.	Pounds of cheese.
1871.....	106,016	7,356,768	469,147
1872.....	135,691	8,823,630	772,630
1873.....	155,464	10,140,313	1,031,510
1874.....	169,618	10,916,942	1,090,238
1875.....	176,278	12,029,371	1,009,990
1876.....	185,149	12,348,971	1,052,348
1877.....	200,379	13,443,195	829,075
1878.....	228,443	14,873,740	1,602,551
1879.....	225,513	15,639,069	586,448
1880.....	227,955	15,693,283	417,904
1881.....	221,213	16,052,020	522,456
1882.....	238,547	17,136,788	335,793
1883.....	288,896	20,525,357	615,497
1884.....	324,385	24,053,631	334,694
1885.....	339,933	24,495,074	850,843
1886.....	392,536	27,953,028	1,303,329
1887.....	392,027	23,117,172	1,074,251
1888.....	416,113	.....	.....
1889.....	412,036	29,165,137	1,274,076
1890.....	473,304	32,218,310	1,385,241
1891.....	424,881	27,203,945	1,374,555

Number of cheese factories, 1892.....	53
Number of creameries, 1892.....	152

SHEEP AND WOOL.

TABLE XVIII.—SHEEP AND WOOL FOR 1891 AND 1892.

(From assessors' report.)

Number of sheep sheared, fall 1891.....	128,756
Wool, pounds, fall 1891.....	668,550
Number of sheep sheared, spring 1892.....	248,177
Wool, pounds, spring 1892.....	1,265,161

BEES, HONEY AND MAPLE SYRUP.

TABLE XIX.—BEES, HONEY AND MAPLE SYRUP IN 1891 AND 1892.

Number of hives, 1891.....	19,083
Number of pounds of honey, 1891.....	331,247
Gallons syrup, 1892.....	11,242
Pounds sugar, 1892.....	13,840

Comparative table of bees and honey for nineteen years.

YEARS.	Hives, No. of.	Honey, pounds.
1872.....	13,704	232,948
1873.....	10,376	134,276
1874.....	7,343	99,296
1875.....	7,134	108,673
1876.....	7,740	101,858
1877.....	10,835	213,768
1878.....	15,105	253,221
1879.....	16,261	208,018
1880.....	14,020	221,255
1881.....	9,287	144,162
1882.....	9,003	166,999
1883.....	10,744	254,964
1884.....	13,418	223,943
1885.....	11,948	243,326
1886.....	14,358	341,047
1887.....	13,300	210,593
1889.....	22,159	746,453
1890.....	20,058	221,333
1891.....	19,083	331,247

The following table will show maple sugar and syrup produced during eighteen years.

YEARS.	Syrup, gallons.	Sugar, pounds.
1874.....	17,256	145,285
1875.....	31,536	151,215
1876.....	10,400	74,022
1877.....	6,182	18,297
1878.....	13,588	52,723
1879.....	10,670	58,462
1880.....	12,449	47,712
1881.....	13,418	49,577
1882.....	12,923	54,512
1883.....	11,638	47,697
1884.....	16,771	35,687
1885.....	11,949	28,964
1886.....	11,297	24,076
1887.....	11,468	12,740
1888.....	8,373	8,478
1890.....	17,195	23,430
1891.....	8,855	16,289
1892.....	11,242	13,840

POPULATION.

TABLE XX.—POPULATION IN MINNESOTA, 1890, AND PRIOR YEARS.

Total population 1890.....	1,301,826
" " 1885.....	1,117,798
" " 1880.....	780,733
" " 1875.....	597,407
" " 1870.....	439,706
" " 1865.....	250,049
" " 1860.....	172,023
" " 1850.....	6,077



## HORSES AND CATTLE.

TABLE XXI.--HORSES AND CATTLE, 1879--1891.

(From returns made to the state auditor for taxation.)

YEARS.	Horses, Mules and Asses.			Cattle.			
	One year old.	Two years old.	Three years old and over.	Under three yrs. old.	Cows all ages.	All other cattle 3 years old and over.	Cattle--Total of all ages, including milch cows.
1879.....				161,266	268,777	126,871	557,914
1880.....				153,786	274,479	121,955	570,210
1881.....				261,985	266,678	55,910	584,573
1882.....				272,577	272,631	49,536	594,794
1883.....				290,938	301,688	52,716	645,402
1884.....				304,528	317,988	50,713	673,229
1885.....	34,414	30,234	271,608	364,371	359,716	51,435	775,522
1886.....	35,236	33,207	292,876	397,455	372,018	35,502	804,975
1887.....	40,425	38,728	284,612	470,269	435,119	68,138	973,526
1888.....	43,860	42,020	302,324	496,399	465,520	78,680	1,040,599
1890.....	50,389	79,451	231,335	440,525	554,269	56,362	1,051,156
1891.....	55,634	53,286	352,533	456,654	554,763	53,812	1,065,229
1892.....	58,731	57,782	372,999	430,629	539,075	54,027	1,023,731

## SHEEP AND HOGS

TABLE XXII.—SHEEP AND HOGS, 1880--1891.

(From returns made to state auditor for taxation.)

YEARS.	Sheep.	Hogs.
1880.....	250,813	216,913
1881.....	267,215	238,987
1882.....	258,415	279,240
1883.....	269,191	309,922
1884.....	280,486	342,328
1885.....	295,659	370,839
1886.....	296,886	337,115
1887.....	295,574	296,525
1888.....	288,260	285,727
1890.....	297,117	364,370
1891.....	337,078	357,659
1892.....	359,223	288,819

# AGRICULTURAL STATISTICS BY COUNTIES.

TABLE I.—WHEAT.

Wheat crop of Minnesota for 1891 and acreage of 1892 by counties.

COUNTIES.	1891			1892.
	Acres.	Bushels.	Yield per acre.	Acres.
Aitkin.....	37	982	26 50	103
Anoka.....	2,001	32,561	16.30	3,965
Becker.....	16,289	307,527	18.90	18,017
Benton.....	13,079	218,566	16.70	14,464
Big Stone.....	20,840	345,527	16.60	23,556
Blue Earth.....	30,001	522,844	17.40	36,160
Brown.....	73,471	1,246,705	17.00	80,553
Carver.....	59,758	938,646	23.60	40,469
Chippewa.....	36,165	835,759	23.10	54,064
Chisago.....	7,466	132,478	17.70	8,447
Clay.....				137,857
Cottonwood.....	45,879	825,831	18.00	49,654
Dakota.....	1,287	24,138	18.80	2,636
Dodge.....	7,596	118,828	15.60	10,092
Douglas.....	68,268	1,490,327	21.80	74,561
Fillmore.....	13,723	189,040	13.80	15,398
Freeborn.....	34,414	612,069	17.80	43,476
Goodhue.....	53,529	894,124	16.70	58,303
Grant.....	49,279	551,517	11.20	57,817
Hennepin.....	20,814	443,858	21.30	25,360
Houston.....	12,102	181,562	15.00	13,571
Hubbard.....	10,000	225,000	22.50	11,000
Isanti.....	5,194	73,872	14.20	6,645
Jackson.....	5,624	92,094	16.40	6,587
Kanabec.....	350	5,192	14.80	460
Kandiyohi.....	74,070	1,217,296	16.40	78,551
Lac qui Parle.....	125,000	2,500,000	20.00	140,000
Lake.....	1	30	30.00	
Le Sueur.....	10,877	223,918	20.60	10,826
Lincoln.....	32,856	515,750	15.70	45,218
Lyon.....	21,319	414,505	19.40	25,887
McLeod.....	50,354	1,101,211	21.90	54,341
Marshall.....	87,113	1,736,086	19.90	71,967
Martin.....	24,569	378,894	15.40	35,266
Meeker.....	71,406	1,071,090	15.00	71,406
Mille Lacs.....				1,105
Morrison.....	24,320	396,737	16.30	27,046
Mower.....	8,353	132,296	15.80	9,195
Nicollet.....	69,745	1,275,975	18.30	70,220
Nobles.....	41,066	692,172	16.90	56,861
Norman.....	94,803	1,774,286	18.70	96,735
Olmsted.....	15,604	256,042	16.40	17,983
Otter Tail.....	74,264	1,505,426	20.30	79,664
Pine.....	405	6,624	16.40	563
Ramsey.....	576	12,966	22.50	1,374
Redwood.....	64,564	1,150,186	17.80	82,301
Renville.....	106,474	1,773,664	16.70	110,120
Rice.....	45,814	864,779	18.90	49,820
Rock.....	33,477	644,285	19.20	44,191
St. Louis.....	3	24	8.00	4
Scott.....	19,135	443,634	23.20	23,450
Sherburne.....	6,359	75,146	11.80	7,625
Sibley.....	84,003	1,590,818	18.90	87,251
Stearns.....	117,269	1,948,391	16.60	122,936
Steele.....	31,617	539,609	17.10	35,640
Stevens.....	44,040	803,220	18.20	50,550
Swift.....	63,184	1,078,744	17.10	74,033
Todd.....	23,952	448,938	18.70	29,262
Traverse.....	55,147	728,021	13.20	61,289
Wabasha.....	7,701	107,326	13.90	7,304
Wadena.....	13,582	241,600	17.80	15,813
Waseca.....	28,855	467,020	16.20	31,021
Washington.....	15,120	249,789	16.50	19,948
Watsonwan.....	34,752	573,711	16.50	44,901
Wilkin.....	29,078	534,531	18.40	37,483
Winona.....	23,029	362,064	15.70	21,321
Wright.....	36,969	834,651	22.50	42,166
Yellow Medicine.....	73,484	1,585,007	21.60	89,873
Unreported towns and counties estimated.	587,868	10,641,404		693,931
Totals.....	2,939,343	53,207,022	18.10	3,469,656

TABLE II.—OATS.

Oat crop of Minnesota for 1891 and average of 1892, by counties.

COUNTIES.	1891			1892.
	Acres.	Bushels.	Yield per acre.	Acres.
Aitkin.....	450	16,980	37.70	626
Anoka.....	5,283	161,256	30.50	6,921
Becker.....	3,733	127,347	34.10	3,901
Benton.....	5,655	185,405	32.40	5,988
Big Stone.....	4,839	131,984	27.30	5,304
Blue Earth.....	18,374	672,978	36.60	19,092
Brown.....	26,714	689,852	25.80	20,898
Carver.....	7,867	410,034	52.10	7,630
Chippewa.....	9,640	289,553	30.00	10,905
Chisago.....	6,433	254,778	39.60	7,759
Clay.....				28,492
Cottonwood.....	25,451	903,584	35.50	26,669
Dakota.....	7,737	207,547	26.80	7,616
Dodge.....	22,390	580,498	25.90	15,708
Douglas.....	13,693	530,564	38.70	14,692
Fillmore.....	58,729	1,985,234	33.80	63,879
Freeborn.....	27,326	1,005,364	36.80	36,776
Goodhue.....	44,789	1,584,374	35.40	41,629
Grant.....	6,604	206,952	31.30	8,191
Hennepin.....	21,188	838,336	39.60	22,706
Houston.....	32,342	854,006	26.40	35,465
Hubbard.....	1,800	45,000	25.00	1,600
Isanti.....	7,496	209,738	28.00	8,498
Jackson.....	3,722	113,332	30.40	3,599
Kanabec.....	264	8,226	31.20	526
Kandiyohi.....	15,506	451,918	29.10	15,793
Lac qui Parle.....	25,000	800,000	32.00	27,000
Lake.....	3	130	43.30	3
Le Seur.....	1,732	65,093	37.60	1,685
Lincoln.....	10,591	308,814	29.20	12,137
Lyon.....	6,655	237,326	35.40	6,826
McLeod.....	10,528	476,448	45.40	10,777
Marshall.....	11,061	369,490	33.40	9,769
Martin.....	29,908	1,108,683	37.10	33,731
Meeker.....	22,560	1,128,000	50.00	22,560
Millie Lacs.....				1,640
Morrison.....	8,085	235,195	29.10	8,704
Mower.....	55,076	2,106,084	38.20	60,167
Nicollet.....	17,770	658,760	37.10	17,950
Nobles.....	20,978	994,249	33.20	33,134
Norman.....	19,103	622,612	32.60	18,180
Olmsted.....	32,420	1,384,552	42.70	33,232
Otter Tail.....	17,228	531,414	30.80	17,207
Pine.....	422	15,514	32.00	644
Ramsey.....	3,304	131,847	39.90	3,519
Redwood.....	20,885	600,236	28.70	22,773
Renville.....	20,138	762,835	37.90	21,694
Rice.....	26,067	965,774	39.10	26,378
Rock.....	25,472	999,057	39.20	27,199
St. Louis.....	231	1,929	8.40	316
Scott.....	5,763	223,870	38.90	7,084
Sherburne.....	5,393	97,193	18.00	6,016
Sibley.....	17,264	765,132	44.30	18,898
Stearns.....	27,246	821,148	30.10	28,186
Steele.....	20,239	722,204	35.70	20,247
Stevens.....	17,045	584,700	30.40	20,850
Swift.....	18,299	476,991	26.10	20,501
Todd.....	5,232	160,585	30.70	6,514
Traverse.....	9,109	243,859	26.80	11,218
Wabasha.....	9,140	242,815	26.60	9,772
Wadena.....	3,576	89,091	24.90	3,772
Waseca.....	10,250	382,554	37.30	10,994
Washington.....	19,895	711,446	35.80	19,264
Watsonwan.....	20,811	651,408	31.30	21,650
Wilkin.....	6,135	215,923	35.20	6,783
Winona.....	28,914	985,171	34.10	30,656
Wright.....	7,924	317,808	40.10	8,167
Yellow Medicine.....	14,507	543,970	37.50	17,335
Unreported towns and counties estimated.	254,746	8,800,187		276,506
Total.....	1,273,730	44,000,937	34.50	1,382,531



TABLE III.—CORN.

Corn crop of Minnesota for 1891, and acreage of 1892, by counties.

COUNTIES.	1891.		1892.	
	Acres.	Bushels.	Yield per acre.	Acres.
Aitkin.....	135	5,261	39.00	107
Anoka.....	5,882	139,090	23.60	5,290
Becker.....	84	2,541	30.30	123
Benton.....	2,679	59,445	22.20	2,038
Big Stone.....	678	14,175	20.90	648
Blue Earth.....	14,986	483,460	32.30	14,194
Brown.....	19,694	400,232	20.30	13,828
Carver.....	11,518	410,884	35.70	11,770
Chippewa.....	2,641	44,039	16.70	2,218
Chisago.....	2,314	54,366	23.50	2,350
Clay.....				427
Cottonwood.....	6,120	186,483	30.50	3,868
Dakota.....	1,878	29,247	15.60	1,676
Dodge.....	9,390	201,874	21.50	6,325
Douglas.....	2,746	87,018	31.60	2,404
Fillmore.....	42,866	1,365,027	31.70	41,315
Freeborn.....	21,107	572,637	27.10	21,100
Goodhue.....	22,423	611,720	27.30	20,497
Grant.....	283	4,228	14.90	142
Hennepin.....	15,837	459,132	29.00	14,912
Houston.....	27,066	793,692	29.30	25,834
Hubbard.....	300	9,000	30.00	200
Isanti.....	4,527	102,834	22.70	4,295
Jackson.....	1,915	41,113	21.50	1,588
Kanabec.....	50	1,457	29.10	42
Kandiyohi.....	4,040	98,766	24.40	3,601
Lac qui Parle.....	11,000	222,000	20.00	10,000
Lake.....	3	106	35.30	
Le Sueur.....	2,959	104,084	35.20	2,792
Lincoln.....	3,367	45,967	13.30	3,943
Lyon.....	4,272	93,430	21.90	3,680
McLeod.....	7,069	259,215	36.70	7,210
Marshall.....	91	1,070	11.80	126
Martin.....	20,133	609,716	30.30	18,215
Meeker.....	6,660	264,400	39.70	6,660
Mille Lacs.....				1,149
Morrison.....	4,208	118,309	28.10	4,119
Mower.....	18,065	497,647	27.50	11,548
Nicollet.....	14,975	505,670	33.80	15,785
Nobles.....	15,716	298,080	19.00	12,337
Norman.....	79	1,463	18.50	61
Olmsted.....	22,658	649,677	28.70	24,095
Otter Tail.....	3,064	74,204	24.20	1,879
Pine.....	101	2,694	26.70	101
Ramsey.....	941	43,135	45.80	1,069
Redwood.....	10,176	214,219	21.10	10,258
Renville.....	10,893	260,455	23.90	12,031
Rice.....	16,290	506,175	31.10	17,004
Rock.....	19,301	488,755	25.30	16,016
Scott.....	6,644	219,465	33.00	7,870
Sherburne.....	8,367	118,882	14.20	8,514
Sibley.....	13,403	473,055	35.30	14,177
Stearns.....	11,926	263,245	22.10	11,306
Steele.....	16,864	452,543	26.80	13,217
Stevens.....	1,225	28,540	23.30	405
Swift.....	2,438	55,101	22.60	2,271
Todd.....	1,887	48,905	25.90	1,565
Traverse.....	1,210	20,174	16.70	889
Wabasha.....	6,730	193,275	28.70	6,595
Wadena.....	1,398	35,022	25.10	1,046
Waseca.....	9,315	339,660	36.50	9,619
Washington.....	9,014	259,592	28.80	8,284
Watsonwan.....	13,808	313,633	22.70	11,896
Wilkin.....	72	870	12.10	90
Winona.....	20,440	633,207	31.00	19,156
Wright.....	9,474	304,112	32.10	10,177
Yellow Medicine.....	7,241	123,794	17.10	6,995
Unreported towns and counties, estimated	138,659	3,580,316		128,740
Totals.....	693,295	18,901,583	27.20	643,702

TABLE IV.—BARLEY.

Barley crop of Minnesota for 1891 and acreage of 1892 by counties.

COUNTIES.	1891.			1892.
	Acres.	Bushels.	Yield per acre.	Acres.
Aitkin .....	33	878	26.60	44
Anoka .....	22	374	17.00	44
Becker .....	419	14,024	33.50	638
Benton .....	121	4,028	33.30	227
Big Stone .....	407	10,901	26.80	579
Blue Earth .....	2,339	55,588	23.80	2,761
Brown .....	1,231	30,764	25.00	2,013
Carver .....	326	11,775	36.10	370
Chippewa .....	1,222	3,373	25.70	2,342
Chisago .....	200	4,949	24.70	299
Clay .....				2,991
Cottonwood .....	4,982	151,946	30.50	6,931
Dakota .....	229	7,390	32.30	455
Dodge .....	14,503	278,922	19.10	13,603
Douglas .....	770	27,611	35.90	1,330
Fillmore .....	31,419	716,731	22.80	31,267
Freeborn .....	6,129	203,208	33.20	13,646
Goodhue .....	43,632	1,463,611	33.50	56,472
Grant .....	505	16,580	32.80	365
Hennepin .....	305	10,148	33.30	504
Houston .....	3,251	76,608	23.60	4,487
Hubbard .....	160	5,000	31.30	199
Isanti .....	36	655	18.20	115
Jackson .....	1,514	35,013	23.10	2,025
Kanabec .....	19	504	26.50	22
Kandiyohi .....	1,436	37,618	26.20	2,307
Lac qui Parle .....	1,500	45,000	30.00	3,000
Lake .....				4
Le Sueur .....	73	2,766	37.90	69
Lincoln .....	1,520	40,961	27.00	3,332
Lyon .....	806	24,443	30.30	1,554
McLeod .....	599	19,852	33.10	765
Marshall .....	7,670	235,086	30.70	9,359
Martin .....	5,476	126,614	21.30	5,836
Mille Lacs .....				225
Morrison .....	128	2,880	22.60	311
Mower .....	31,971	1,169,707	36.60	42,702
Nicollet .....	1,055	28,000	26.50	1,705
Nobles .....	12,977	349,509	26.90	21,511
Norman .....	3,821	130,236	34.10	6,704
Olmsted .....	38,858	1,183,524	30.50	48,025
Otter Tail .....	1,460	46,159	31.60	1,855
Pine .....	116	996	8.60	56
Ramsey .....	127	4,788	37.70	312
Redwood .....	1,126	32,297	28.70	2,742
Renville .....	1,628	47,332	29.10	2,330
Rice .....	1,187	41,475	34.90	1,829
Rock .....	15,599	506,114	32.40	24,508
St. Louis .....	40	606	15.00	57
Scott .....	323	8,121	25.10	309
Sherburne .....	58	1,731	29.90	99
Sibley .....	1,866	57,699	30.90	2,404
Stearns .....	2,028	62,415	30.70	3,029
Steele .....	3,379	84,494	25.00	4,059
Stevens .....	1,555	35,470	22.80	1,650
Swift .....	1,366	30,454	22.30	2,364
Todd .....	313	9,224	29.80	498
Traverse .....	1,723	46,643	27.10	2,524
Wabasha .....	12,973	332,881	25.70	15,346
Wadena .....	120	2,640	22.00	166
Waseca .....	429	12,069	28.10	376
Washington .....	5,255	162,924	31.00	7,114
Watsonwan .....	1,681	35,443	21.10	2,258
Wilkin .....	1,700	50,651	29.60	2,101
Winona .....	38,741	1,148,432	29.60	47,950
Wright .....	178	5,541	31.10	224
Yellow Medicine .....	1,033	30,545	29.60	1,921
Unreported towns and counties, estimated	79,441	2,337,977	.....	104,802
Totals .....	397,208	11,689,887	29.40	524,012

TABLE V.—RYE.

Rye crop of Minnesota for 1891 and acreage of 1892 by counties.

COUNTIES.	1891.			1892.
	Acres.	Bushels.	Yield per acre.	Acres.
Aitkin	11	380	34.50	9
Anoka	1,912	26,701	35.40	2,757
Becker	67	1,182	17.60	44
Benton	1,258	17,744	14.10	1,610
Blue Earth	28	780	27.90	44
Brown	105	5,658	53.90	99
Carver	707	18,800	26.60	1,064
Chippewa	23	180	7.80	10
Chisago	887	13,815	15.60	907
Clay				17
Cottonwood	50	305	6.10	
Dakota	214	4,195	19.60	252
Dodge	908	18,025	19.90	2,260
Douglas	64	1,596	24.90	97
Fillmore	1,692	27,901	16.50	2,343
Freeborn	146	3,033	20.80	411
Goodhue	6,359	113,455	17.80	13,492
Grant				2
Hennepin	833	15,047	18.10	1,213
Houston	1,437	18,214	12.70	1,278
Hubbard	149	4,001	26.90	87
Isanti	2,051	24,591	12.00	2,431
Jackson	16	118	7.40	30
Kanabec	256	5,116	20.00	190
Kandiyohi	18	277	15.40	56
Lake				1
Le Sueur	8	185	23.10	8
Lincoln	209	1,706	8.20	192
Lyon	1	20	20.00	
McLeod	132	3,273	24.80	165
Marshall	258	4,854	18.80	335
Martin	109	1,963	18.00	174
Mille Lacs				760
Morrison	1,356	19,071	14.10	2,315
Mower	396	7,069	17.80	622
Nicollet	215	6,770	31.50	520
Nobles	851	11,280	13.30	1,631
Norman	56	1,325	23.70	79
Olmstead	1,203	21,219	17.60	2,152
Otter Tail	262	5,571	21.30	165
Pine	29	478	19.50	51
Ramsey	116	2,249	19.40	118
Redwood	13	223	17.20	59
Renville	50	723	14.50	78
Rice	2,420	42,836	17.70	3,648
Rock	413	4,769	11.50	375
St. Louis	30	318	10.60	44
Scott	1,101	20,847	18.90	2,274
Sherburne	4,313	51,345	11.90	6,198
Sibley	1,034	10,575	10.20	1,055
Stearns	1,007	17,476	17.40	1,214
Steele	2,233	45,938	20.60	3,635
Stevens		220	22.00	20
Swift	41	785	19.10	39
Todd	298	5,500	18.50	302
Traverse				15
Wabasha	592	9,519	16.10	742
Wadena	679	11,811	17.40	547
Waseca	55	1,283	23.30	112
Washington	3,270	64,610	19.80	4,801
Watsonwan	48	627	12.90	112
Wilkin	56	990	17.70	95
Winona	1,954	32,654	16.70	2,920
Wright	943	16,256	17.20	1,519
Yellow Medicine	42	2,053	48.90	11
Unreported towns and counties, estimated	11,248	187,376	.....	17,451
Totals	56,242	936,881	16.60	87,257



TABLE VI.—BUCKWHEAT.

Buckwheat crop of Minnesota for 1891 and acreage of 1892, by counties.

COUNTIES.	1891.			1892.
	Acres.	Bushels.	Yield per acre.	Acres.
Aitkin ..	5	100	20.00	9
Anoka.....	236	2,702	11.00	249
Becker.....	1	60	60.00	
Benton.....	212	56		20
Big Stone ..				3
Blue Earth.....	2	60	30.00	
Brown.....	11	148	13.50	14
Carver.....	6	182	30.30	3
Chippewa.....				1
Chisago.....	46	745	16.20	41
Clay.....				49
Cottonwood.....	44	900	20.50	14
Dakota.....	112	1,691	15.10	88
Dodge.....	339	3,450	10.20	517
Douglas.....	5	50	10.00	58
Fillmore.....	1,185	12,372	10.50	534
Freeborn.....	59	887	15.10	89
Goodhue.....	292	3,613	12.40	343
Hennepin.....	53	767	14.50	44
Houston.....	300	4,440	14.50	380
Hubbard.....	1	21	21.00	2
Isanti.....	98	1,574	16.10	290
Jackson.....	11	146	13.30	39
Kanabec.....	1	5	5.00	6
Kandiyohi.....	4	40	10.00	
McLeod.....	11	254	23.10	1
Marshall.....	6	90	15.00	11
Martin.....	238	1,429	6.00	78
Mille Laes.....				130
Morrison.....	196	481	2.50	38
Mower.....	746	11,529	15.50	1,011
Nicollet.....	5	40	8.00	15
Nobles.....	109	1,357	12.40	141
Olmsted.....	258	3,727	14.40	308
Otter Tail.....	5	100	20.00	6
Pine.....	9	236	26.20	17
Ramsey.....	38	1,061	27.90	14
Redwood.....	2	50	25.00	4
Renville.....	21	151	7.20	14
Rice.....	207	9,821	47.40	198
Rock.....	24	190	8.00	8
Scott.....	15	134	8.90	7
Sherburne.....	58	486	8.40	61
Sibley.....	36	570	15.80	16
Stearns.....	91	1,046	11.50	55
Steele.....	81	1,139	14.00	31
Stevens.....	75	1,450	19.30	50
Swift.....	4	105	26.20	
Todd.....	32	744	23.30	12
Traverse.....	4	70	17.50	
Wabasha.....	127	892	7.00	47
Wadena.....	17	266	15.60	36
Waseca.....	30	282	9.40	5
Washington.....	232	1,569	6.80	142
Watsonwan.....	43	365	8.50	27
Winona.....	619	7,647	12.40	671
Wright.....	45	614	13.60	22
Yellow Medicine.....	1	12	12.00	1
Unreported towns and counties estimated	1,602	20,479		1,492
Totals.....	8,010	102,395	12.70	7,462

TABLE VII.—POTATOES.

Potato crop of Minnesota for 1891 and acreage of 1892 by counties.

COUNTIES.	1891.		1892.
	Acres.	Bushels.	Acres.
Aitkin .....	199	25,428	217
Anoka .....	2,646	289,142	2,707
Becker .....	282	34,815	253
Benton .....	480	55,686	392
Big Stone .....	101	10,210	106
Blue Earth .....	524	45,015	533
Brown .....	727	44,834	897
Carver .....	1,089	104,325	1,111
Chippewa .....	197	15,227	201
Chisago .....	4,474	562,641	4,616
Clay .....			1,120
Cottonwood .....	471	21,171	515
Dakota .....	257	33,783	307
Dodge .....	367	44,253	311
Douglas .....	869	108,448	911
Fillmore .....	1,628	140,934	1,487
Freeborn .....	2,144	167,633	2,154
Goodhue .....	1,311	138,155	1,328
Grant .....		39,933	243
Hennepin .....	6,413	752,867	6,517
Houston .....	1,367	138,604	1,449
Hubbard .....	100	10,000	100
Isanti .....	4,972	611,973	4,789
Jackson .....	107	6,229	105
Kanabec .....	141	14,010	170
Kandiyohi .....	432	33,510	540
Lac qui Parle .....	1,000	50,000	1,100
Lake .....	7	735	6
Le Seur .....	242	27,136	237
Lincoln .....	424	24,824	427
Lyons .....	149	12,668	170
McLeod .....	723	74,308	734
Marshall .....	647	65,579	376
Martin .....	655	56,939	774
Meeker .....	2,525	227,250	2,525
Mille Lacs .....			586
Morrison .....	788	96,744	739
Mower .....	1,413	171,533	1,679
Nicollet .....	875	87,410	995
Nobles .....	574	60,494	666
Norman .....	504	70,484	460
Olmsted .....	1,074	141,960	1,047
Otter Tail .....	933	112,382	857
Pine .....	263	22,768	221
Ramsey .....	930	117,735	1,070
Redwood .....	468	36,968	484
Renville .....	692	44,299	737
Rice .....	870	74,752	1,160
Rock .....	534	49,872	458
St. Louis .....	297	32,954	342
Scott .....	594	58,050	676
Sherburne .....	764	68,561	724
Sibley .....	1,006	82,299	1,030
Stearns .....	2,257	173,578	2,251
Steele .....	967	102,863	942
Stevens .....	470	45,170	645
Swift .....	456	35,148	427
Todd .....	576	62,157	582
Traverse .....	240	17,499	322
Wabasha .....	557	37,835	711
Wadena .....	331	39,639	312
Waseca .....	638	56,617	695
Washington .....	1,982	249,654	1,734
Watsonwan .....	309	23,699	352
Wilkin .....	120	15,153	148
Winona .....	1,804	186,155	1,885
Wright .....	993	123,175	888
Yellow Medicine .....	414	32,750	490
Unreported towns and counties estimated .....	15,590	1,629,655	16,435
Totals .....	77,953	8,148,277	82,178

TABLE VIII.—BEANS.

Bean crop of Minnesota for 1891 and acreage of 1892, by counties.

COUNTIES.	1891.		1892.
	Acres	Bushels.	Acres.
Aitkin.....	87	1,586	92
Anoka.....	236	1,872	211
Becker.....	2	37	1
Benton.....	19	176	24
Big Stone.....			4
Blue Earth.....	10	101	12
Brown.....	14	250	8
Carver.....	8	65	4
Chippewa.....	1	5	5
Chisago.....	70	996	59
Clay.....			13
Cottonwood.....	38	190	
Dakota.....	13	160	3
Dodge.....	13	42	5
Douglas.....	6	63	5
Fillmore.....	41	706	100
Freeborn.....	6	155	19
Goodhue.....	301	3,662	191
Grant.....	449		
Hennepin.....	137	1,319	124
Houston.....	78	961	92
Hubbard.....	2	6	8
Isanti.....	393	2,997	486
Kanabec.....	10	131	11
Kandiyohi.....			1
Lac qui Parle.....	20	500	20
Le Sueur.....	10	85	5
Lincoln.....	1	12	1
Lyon.....	4	22	46
McLeod.....	17	404	3
Marshall.....	8	240	9
Martin.....	19	187	20
Mille Lacs.....			89
Morrison.....	153	1,231	45
Mower.....	10	234	26
Nicollet.....	35	330	50
Nobles.....	28	506	24
Norman.....	3	2	3
Olmsted.....	11	202	14
Otter Tail.....	3	81	5
Pine.....	5	68	5
Ramsey.....	13	193	20
Redwood.....	2	31	7
Renville.....	13	68	11
Rice.....	13	350	22
Rock.....	12	228	15
Scott.....	1	10	6
Sherburne.....	81	549	74
Sibley.....	20	352	14
Stearns.....	15	122	15
Steele.....	10	146	28
Stevens.....	48	702	100
Swift.....	1	3	10
Todd.....	29	284	40
Traverse.....	2	53	1
Wabasha.....	1	37	250
Wadena.....	4	68	6
Waseca.....	5	65	6
Washington.....	126	1,243	90
Watonwan.....	10	88	4
Wilkin.....	6	82	3
Winona.....	16	322	24
Wright.....	30	304	23
Yellow Medicine.....	5	54	3
Unreported towns and counties estimated.....	681	6,234	653
Totals.....	3,405	31,172	3,268



TABLE IX.—SUGAR.

Showing cane crop of Minnesota for 1891 and acreage of 1892 by counties.

COUNTIES.	1891.			1892.
	Acres.	Syrup, gallons.	Sugar, pounds.	Acres.
Aitkin.....				3
Anoka.....	64	611		20
Benton.....	4	240		4
Blue Earth.....	27	1,667		44
Brown.....	78	6,350		49
Carver.....	134	12,843		97
Chippewa.....	11	176		8
Chisago.....	9	794		6
Cottonwood.....	10			
Dakota.....	2	108	321	
Dodge.....	4	230		
Douglas.....	2	121		1
Fillmore.....	59	5,382		26
Freeborn.....	11	752		13
Goodhue.....	127	12,966		258
Hennepin.....	70	6,449		47
Houston.....	56	2,810		60
Isanti.....	43	1,203		251
Jackson.....	2	74		101
Kandiyohi.....	3	200	20	1
Le Sueur.....	8	667		5
McLeod.....	47	4,833	7	33
Martin.....	48	3,179		37
Mille Lacs.....				10
Morrison.....	2	162		155
Nicollet.....	135	10,180	140	190
Olmsted.....	14	939		10
Ramsey.....	1	325		1
Redwood.....	1	130		2
Renville.....	9	468		7
Rice.....	61	4,774	1,000	32
Scott.....	40	2,426		32
Sherburne.....	14	367		14
Sibley.....	72	6,182	7	69
Stearns.....	22	1,781		20
Steele.....	3	449		1
Swift.....				1
Wabasha.....	1	50		5
Waseca.....	13	1,030		15
Watsonwan.....	31	3,425		32
Winona.....	13	693		4
Wright.....	87	8,890	1,010	73
Yellow Medicine.....	1	150		
Unreported towns and counties estimated	334	26,019	625	434
Totals.....	1,673	130,095	3,131	2,171

TABLE X.—CULTIVATED HAY.

Cultivated hay crop of Minnesota for 1891 and acreage of 1892 by counties.

COUNTIES.	1891.		1892.
	Acres.	Tons.	Acres.
Aitkin.....	88	164	150
Anoka.....	2,526	2,560	1,881
Becker.....	1,126	1,631	1,281
Benton.....	979	1,057	837
Big Stone.....	107	144	100
Blue Earth.....	2,240	3,585	3,068
Brown.....	641	1,007	1,343
Carver.....	1,902	2,581	1,910
Chippewa.....	1,195	1,597	1,136
Chisago.....	5,283	6,952	5,080
Clay.....			1,488
Cottonwood.....	3,485	4,406	4,084
Dakota.....	2,925	3,862	2,348
Dodge.....	16,195	23,240	18,658
Douglas.....	2,085	3,078	2,305
Fillmore.....	37,841	49,686	45,130
Freeborn.....	6,708	10,005	9,407
Goodhue.....	43,787	46,881	35,973
Grant.....	522	357	150
Hennepin.....	12,198	11,782	10,462
Houston.....	20,085	25,069	20,446
Hubbard.....	100	120	200
Isanti.....	2,460	2,460	1,851
Jackson.....	155	237	506
Kanabec.....	497	633	274
Kandiyohi.....	1,302	1,897	1,030
Lac qui Parle.....	2,000	4,000	2,500
Lake.....	93	138	94
Le Seur.....	59	138	31
Lincoln.....	717	696	777
Lyon.....	460	701	441
McLeod.....	1,236	1,609	1,318
Marshall.....	1,480	2,670	1,278
Martin.....	1,087	1,859	1,690
Mille Lacs.....			255
Morrison.....	712	924	1,144
Mower.....	35,946	48,088	52,901
Nicollet.....	1,960	3,795	2,165
Nobles.....	5,014	4,514	9,257
Norman.....	3,732	6,605	3,377
Olmsted.....	29,171	45,903	27,190
Otter Tail.....	3,040	3,412	3,244
Pine.....	1,623	2,300	1,553
Ramsey.....	3,916	4,859	3,755
Redwood.....	663	1,075	773
Renville.....	1,203	1,953	1,588
Rice.....	9,793	12,460	9,560
Rock.....	3,959	5,876	5,765
St Louis.....	2,119	1,767	2,386
Scott.....	1,029	1,095	897
Sherburne.....	1,300	970	933
Sibley.....	421	747	529
Stearns.....	3,114	3,236	2,665
Steele.....	7,157	12,229	7,367
Stevens.....	1,410	1,467	1,145
Swift.....	808	1,139	1,04
Todd.....	866	1,138	716
Traverse.....	825	1,141	1,187
Wabasha.....	4,637	7,120	4,216
Wadena.....	109	168	124
Waseca.....	1,729	2,607	2,036
Washington.....	17,236	20,340	16,035
Watsonwan.....	822	1,763	2,062
Wilkin.....	247	503	441
Winona.....	25,585	33,932	26,073
Wright.....	2,936	3,742	2,705
Yellow Medicine.....	460	910	603
Unreported Towns and Counties estimated.....	86,776	113,645	93,735
Totals.....	433,882	568,225	468,667

TABLE XI.—FLAX SEED.

Flax seed of Minnesota for 1891 and acreage of 1892 by counties.

COUNTIES.	1891.			1892.
	Acres.	Bushels.	Yield per acre.	Acres.
Anoka.....	20	90	4.50	5
Becker.....	355	5,409	15.20	14
Benton.....	62	1,095	17.70	9
Big Stone.....	2,041	26,188	12.80	422
Blue Earth.....	6,498	69,116	10.60	4,477
Brown.....	11,854	143,335	12.10	3,704
Carver.....	19	85	4.50	10
Chippewa.....	5,299	44,100	8.30	1,823
Chisago.....				1
Clay.....				206
Cottonwood.....	14,372	125,762	8.80	8,013
Dakota.....	751	14,154	18.80	
Dodge.....	14,751	156,617	10.60	11,097
Douglas.....	131	1,139	8.70	6
Fillmore.....	29,188	346,982	11.90	24,726
Freeborn.....	7,076	68,033	9.60	3,713
Goodhue.....	15,123	148,390	9.80	8,094
Grant.....	22	222	10.10	
Hennepin.....	10	80	8.00	26
Houston.....	2,128	28,170	13.20	1,502
Jackson.....	2,549	26,350	10.30	1,805
Kandiyohi.....	2,855	25,442	8.90	1,212
Lac qui Parle.....	3,000	30,000	10.00	1,500
Lincoln.....	14,793	107,875	7.30	5,606
Lyon.....	4,489	49,805	11.10	2,139
McLeod.....	1,030	10,368	10.10	278
Marshall.....	168	1,700	10.10	200
Martin.....	21,652	217,885	10.10	14,787
Morrison.....	32	172	5.40	38
Mower.....	32,759	405,616	12.40	29,412
Nicollet.....	4,130	51,310	12.40	3,020
Nobles.....	18,265	192,921	10.60	14,866
Norman.....	295	2,300	7.80	48
Olmsted.....	15,756	209,617	13.30	13,223
Otter Tail.....	94	1,131	12.00	106
Pine.....	1	2	2.00	11
Redwood.....	13,073	126,794	9.70	5,118
Renville.....	11,429	121,718	10.70	3,671
Rice.....	4,480	50,614	13.30	3,660
Rock.....	10,026	116,593	10.60	4,678
Scott.....	139	1,364	9.80	63
Sherburne.....	35	266	7.60	10
Sibley.....	3,074	38,785	12.60	886
Stearns.....	1,511	13,131	8.70	696
Steele.....	3,328	35,123	10.60	2,279
Stevens.....	7,280	84,120	11.60	3,850
Swift.....	7,838	71,637	9.10	2,464
Todd.....	198	1,900	9.60	4
Traverse.....	446	2,186	4.90	37
Wabasha.....	601	7,707	12.80	505
Wadena.....	8	120	15.00	
Waseca.....	1,671	16,449	9.80	601
Washington....	966	10,403	10.80	548
Watsonwan.....	13,128	150,557	11.50	5,323
Wilkin.....	690	6,293	9.10	118
Winona.....	3,804	59,808	15.70	2,630
Wright.....	63	797	12.70	50
Yellow Medicine.....	6,734	65,814	9.80	1,561
Unreported towns and counties, estimated	80,522	875,660		48,722
Totals.....	402,612	4,378,300		243,613



TABLE XII.—TOTAL CULTIVATED ACREAGE.—*Wild Hay.*

Total cultivated acreage for 1891 and 1892.—Wild hay for 1891.

COUNTIES.	1891.	1892.	1891
	Acres.	Acres.	Wild hay, tons.
Aitkin.....	1,270	1,582	4,118
Anoka.....	21,057	24,242	14,713
Becker.....	22,399	24,322	9,673
Benton.....	24,641	25,705	11,095
Big Stone....	29,014	30,782	8,582
Blue Earth....	75,082	80,442	14,369
Brown.....	134,688	123,505	44,645
Carver.....	63,493	64,743	21,494
Chippewa.....	56,426	72,773	20,534
Chisago.....	27,260	29,638	12,160
Clay.....		172,733	
Cottonwood....	100,958	99,773	24,855
Dakota.....	15,415	15,478	965
Dodge.....	86,725	78,653	7,071
Douglas.....	88,757	96,582	41,630
Fillmore.....	233,268	237,046	5,253
Freeborn.....	105,452	131,072	47,861
Goodhue.....	233,305	238,062	17,735
Grant.....	57,664	66,922	5,766
Hennepin.....	80,143	84,403	29,484
Houston.....	101,973	106,165	4,516
Hubbard.....	12,637	13,409	75
Isanti.....	27,339	29,789	14,378
Jackson.....	15,615	16,399	3,275
Kanabec.....	1,616	1,726	1,326
Kandiyohi....	99,770	103,218	68,856
Lac qui Parle..	168,620	185,220	55,000
Lake.....	110	112	6
Le Seur.....	16,068	15,759	4,391
Lincoln.....	64,488	71,856	17,932
Lyon.....	38,213	40,778	8,668
McLeod.....	71,952	75,871	28,810
Marshall.....	108,528	93,489	17,397
Martin.....	104,088	110,813	63,556
Meeker.....	103,151	103,151	
Mille Lacs....		6,400	
Morrison.....	40,112	44,878	14,074
Mower.....	189,738	214,083	26,120
Nicollet.....	111,120	113,375	50,800
Nobles.....	124,977	151,018	35,832
Norman.....	122,403	125,735	28,248
Olsted.....	162,174	171,263	7,601
Otter Tail....	100,481	105,120	24,788
Pine.....	3,076	3,271	852
Ramsey.....	12,543	13,525	2,620
Redwood.....	111,173	125,360	34,904
Renville.....	152,560	152,306	50,299
Rice.....	107,870	113,728	29,589
Rock.....	108,908	123,693	17,395
St. Louis.....	2,811	3,233	405
Scott.....	34,909	42,781	8,007
Sherburne....	26,809	30,340	10,659
Sibley.....	122,373	126,514	45,753
Stearns.....	166,815	172,662	51,528
Steele.....	85,984	87,955	32,579
Stevens.....	73,313	79,475	26,510
Swift.....	94,440	103,196	36,330
Todd.....	33,637	39,646	17,067
Traverse.....	68,811	77,615	9,341
Wabasha.....	43,938	46,057	512
Wadena.....	19,915	21,940	4,195
Waseca.....	61,348	61,859	15,920
Washington....	75,194	80,053	2,237
Watsonwan....	85,572	88,726	28,566
Wilkin.....	38,118	47,292	6,528
Winona.....	152,060	150,862	1,721
Wright.....	59,923	66,361	18,884
Yellow Medicine	104,067	118,948	35,045
Unreported towns and counties, estimated.....	1,272,027	1,702,191	326,424
Totals.....	6,360,154	6,979,674	1,632,122

TABLE XIII.—TIMOTHY AND CLOVER.

Timothy and Clover Seed, crop of Minnesota for 1891 by counties.

COUNTIES.	1891.	
	Timothy. Bus. Seed.	Clover. Bus. Seed.
Anoka .....	12	.....
Becker .....	33	.....
Benton .....	94	.....
Blue Earth .....	1,432	583
Brown .....	531	10
Carver .....	1	6
Chippewa .....	118	2
Chisago .....	59	115
Cottonwood .....	300	2
Dakota .....	.....	10
Dodge .....	27,096	45
Douglas .....	170	68
Fillmore .....	55,133	3,162
Freeborn .....	3,675	701
Goodhue .....	5,277	612
Grant .....	40	.....
Hennepin .....	9	676
Houston .....	1,457	519
Hubbard .....	3	.....
Isanti .....	68	5
Jackson .....	106	.....
Kandiyohi .....	116	.....
Lac qui Parle .....	300	.....
Le Sueur .....	.....	12
Lincoln .....	268	.....
Lyon .....	370	2
McLeod .....	123	127
Marshall .....	2,881	.....
Martin .....	1,949	7
Morrison .....	31	363
Mower .....	195,138	718
Nicollet .....	220	190
Nobles .....	5,003	252
Norman .....	902	.....
Olmsted .....	40,415	529
Otter Tail .....	174	.....
Pine .....	3	.....
Ramsey .....	.....	62
Redwood .....	136	30
Renville .....	289	110
Rice .....	1,024	1,537
Rock .....	5,819	408
Scott .....	3	759
Sherburne .....	51	.....
Sibley .....	162	26
Stearns .....	102	12
Steele .....	2,001	288
Stevens .....	50	30
Todd .....	96	.....
Wabasha .....	1,374	155
Wadena .....	100	.....
Waseca .....	172	484
Washington .....	292	308
Watsonwan .....	2,406	90
Wilkin .....	14	.....
Winona .....	17,350	226
Wright .....	74	66
Yellow Medicine .....	283	1
Unreported towns and counties estimated .....	93,826	3,324
Totals .....	469,131	16,632

TABLE XIV.—APPLES.

Apple trees growing and bearing in 1891 and 1892, and bushels produced in 1891.

COUNTIES.	1891.		Apples, bushels.	1892.	
	Trees growing.	Trees bearing.		Trees growing.	Trees bearing.
Aitkin.....	312	50	23	350	68
Anoka.....	601	391	192	718	454
Becker.....	340	41	2	306	12
Benton.....	824	213	137	1,052	291
Big Stone.....	964	184	78	1,030	226
Blue Earth.....	3,100	1,131	647	3,084	907
Brown.....	4,836	1,295	772	6,320	1,927
Carver.....	4,577	2,018	2,329	5,026	2,949
Chippewa.....	1,062	236	130	1,250	318
Chisago.....	2,006	773	579	2,161	747
Clay.....				265	43
Cottonwood.....	862	169	8	1,113	338
Dodge.....	3,496	1,649	970	3,152	1,505
Douglas.....	2,826	590	314	3,827	1,149
Fillmore.....	29,710	17,597	9,818	25,951	15,317
Freeborn.....	12,370	5,853	3,373	14,955	8,033
Goodhue.....	23,015	9,187	4,667	20,687	10,958
Grant.....	390	195	106	196	
Hennepin.....	11,383	4,892	3,833	29,109	5,678
Houston.....	13,301	7,715	10,334	14,557	8,203
Hubbard.....	400	5		300	5
Isanti.....	1,241	710	269	1,304	740
Jackson.....	677	119	64	1,555	264
Kanabec.....	63	16	9	40	21
Kandiyohi.....	2,531	855	513	2,794	1,039
Lac qui Parle.....	2,500	250	75	2,500	250
Le Sueur.....	313	229	113	199	155
Lincoln.....	1,485	239	77	2,127	239
Lyon.....	2,612	706	81	2,512	464
McLeod.....	2,287	823	527	2,620	735
Marshall.....	50			32	
Martin.....	18,433	4,005	1,580	12,280	4,363
Mille Lacs.....				850	663
Morrison.....	735	236	53	1,638	378
Mower.....	5,005	1,839	1,318	6,793	1,894
Nicollet.....	8,205	4,235	3,415	9,835	5,610
Nobles.....	7,165	1,632	508	9,882	2,185
Norman.....	329	3		272	11
Olmsted.....	18,260	10,932	8,408	18,374	13,666
Otter Tail.....	936	430	111	1,154	384
Pine.....	231	93	30	443	75
Ramsey.....	1,002	247	217	611	200
Redwood.....	3,582	772	181	3,836	1,248
Renville.....	2,481	430	147	3,095	783
Rice.....	4,530	2,646	2,612	5,100	2,935
Rock.....	8,197	1,931	659	10,155	2,254
St. Louis.....	81	6		59	12
Scott.....	1,235	773	1,440	1,198	674
Sherburne.....	384	203	121	326	123
Sibley.....	5,509	1,836	1,469	5,978	1,883
Stearns.....	1,913	947	779	2,081	928
Steele.....	7,973	3,511	1,189	8,343	3,610
Stevens.....	950	455	165	1,770	799
Swift.....	577	145	92	1,046	200
Todd.....	1,161	240	130	1,676	292
Traverse.....	983	84	33	1,015	159
Wabasha.....	5,216	2,324	2,337	5,521	2,471
Wadena.....	324	3		332	29
Waseca.....	2,898	1,223	424	3,340	1,610
Washington.....	4,259	2,186	2,045	3,875	1,347
Watsonwn.....	3,351	662	402	5,733	1,144
Wilkin.....	74			31	
Winona.....	25,523	10,342	14,220	27,836	14,893
Wright.....	5,120	3,272	2,037	5,231	3,402
Yellow Medicine.....	1,930	424	218	2,568	546
Unreported towns and counties	69,671	29,057	21,595	78,342	33,451
Totals.....	348,357	145,285	107,975	391,711	167,257



TABLE XV.—GRAPES.

Grape vines and Grapes — Nurseries — Tobacco crop.

COUNTIES.	1891.		1892.		1891.
	Vines bearing.	Grapes pounds.	Vines bearing.	Nurseries number.	Tobacco pounds.
Aitkin.....	200	300	206		75
Anoka.....	8	30	20	1	402
Becker.....					30
Benton.....	196	501	160		456
Big Stone.....	4		4		
Blue Earth.....	931	4,475	811	1	
Brown.....	1,511	3,670	1,699		365
Carver.....	3,466	9,945	2,395	2	226
Chippewa.....	23	2	57		
Chisago.....	29	50	4		50
Dodge.....	92	316	21		
Douglas.....			100		
Fillmore.....	1,248	4,644	836		27,650
Freeborn.....	330	2,546	564	1	
Goodhue.....	1,659	6,835	1,606	1	
Hennepin.....	6,403	35,835	10,234		315
Houston.....	14,976	132,531	12,785	2	500
Isanti.....	3	11	5		20
Jackson.....	6		95		
Kanabec.....					20
Kandiyohi.....	50	277	10		
Lac qui Parle.....	250	250	500	1	
Le Sueur.....	208	1,291	76		4,860
Lincoln.....	16	10	10		25
Lyon.....	414	3	433		
McLeod.....	254	241	134		480
Marshall.....					30
Martin.....	351	387	352		500
Morrison.....	39	30	38		928
Mower.....	9	6	6		
Nicollet.....	1,090	3,570	1,730		
Nobles.....	191	446	155	2	
Olmsted.....	3,170	4,517	714	3	9
Otter Tail.....	1		1		525
Pine.....	10	13	10		33
Ramsey.....	1,446	3,800	1,012		55
Redwood.....	212	203	203		
Renville.....	131	225	142		23
Rice.....	765	3,220	660	3	
Rock.....	539	1,970	409	1	25
St. Louis.....					60
Scott.....	2,642	3,639	2,562		
Sherburne.....	49	5	99		
Sibley.....	448	792	475		463
Stearns.....	25	327	17		198
Steele.....	231	665	224	1	50
Stevens.....	13		65		50
Swift.....	38		30		
Todd.....	12		86		270
Traverse.....			22		
Wabasha.....	98	531	245		
Wadena.....	5		4		
Waseca.....	175	71	163		
Washington.....	1,744	4,016	1,253	1	20
Watsonwan.....	121	639	173		23
Winona.....	3,413	14,506	3,330		500
Wright.....	1,925	8,932	1,970		427
Yellow Medicine.....	37	50	50		10
Unreported towns and counties, estimated.	12,750	64,080	12,241	5	9,918
Totals .....	63,751	320,403	61,206	25	49,591

TABLE XVI.—OTHER PRODUCTS AND FARMS.

Total acreage of other products for 1891 and number of farms for 1892, by counties:

COUNTIES.	Total acreage of other products.		Number of farms.	
	1891.	1892.	Whole number.	Of which new.
Aitkin .....	225	203	215	16
Anoka .....	229	192	628	8
Becker .....	41	50	504	6
Benton .....	93	92	467	13
Big Stone .....	1	20	239	7
Blue Earth .....	53	57	736	1
Brown .....	148	199	1,385	16
Carver .....	159	205	1,677	.....
Chippewa .....	32	60	285	12
Chisago .....	78	73	1,276	13
Clay .....	.....	73	1,588	6
Cottonwood .....	56	25	1,365	42
Dakota .....	10	97	224	1
Dodge .....	179	77	371	.....
Douglas .....	118	212	1,882	13
Fillmore .....	14,897	10,841	.....	.....
Freeborn .....	326	268	1,744	7
Goodhue .....	1,632	1,482	2,199	.....
Grant .....	.....	3	.....	.....
Hennepin .....	2,285	2,488	1,639	10
Houston .....	1,761	1,601	1,342	.....
Hubbard .....	25	13	200	10
Isanti .....	69	133	1,271	14
Jackson .....	.....	14	26	.....
Kanabec .....	28	25	188	6
Kandiyohi .....	104	126	1,707	6
Lac qui Parle .....	100	100	1,700	85
Lake .....	3	4	.....	.....
Le Sueur .....	100	101	494	.....
Lincoln .....	10	203	679	27
Lyon .....	58	35	407	1
McLeod .....	186	246	698	3
Marshall .....	26	59	1,469	.....
Martin .....	194	205	738	58
Mille Lacs .....	.....	451	483	121
Morrison .....	132	234	839	32
Mower .....	5,003	4,820	1,820	5
Nicollet .....	220	760	1,356	.....
Nobles .....	399	560	854	69
Norman .....	7	88	1,526	8
Olmsted .....	5,147	3,984	1,822	.....
Otter Tail .....	128	132	1,657	13
Pine .....	102	49	224	.....
Ramsey .....	2,581	2,273	221	.....
Redwood .....	200	839	925	53
Renville .....	10	25	819	10
Rice .....	468	417	1,856	20
Rock .....	91	480	975	6
St. Louis .....	91	84	238	1
Scott .....	125	113	384	.....
Sherburne .....	67	72	414	4
Sibley .....	174	185	1,901	3
Stearns .....	329	289	2,148	46
Steele .....	106	509	930	.....
Stevens .....	155	210	782	82
Swift .....	5	44	1,104	7
Todd .....	244	151	834	26
Traverse .....	105	133	410	23
Wabasha .....	878	834	359	1
Wadena .....	91	118	455	36
Waseca .....	8,358	6,379	752	14
Washington .....	2,098	2,093	1,029	.....
Watsonwan .....	129	109	945	20
Wilkin .....	5	30	208	10
Winona .....	7,141	5,572	1,878	2
Wright .....	281	347	1,937	3
Yellow Medicine .....	145	155	907	54
Unreported towns and counties, estimated	14,560	13,031	30,584	263
Totals .....	72,801	65,157	92,917	1,317

TABLE XVII.—COWS, BUTTER AND CHEESE.  
Milch Cows, Butter and Cheese and Cheese Factories.

COUNTIES.	1891.			1892.		
	Cows number.	Butter pounds.	Cheese pounds.	Cows number.	No. cheese factories.	Creamer's
Aitkin.....	393	30,316	3,500	428		
Anoka.....	3,491	218,662	127	3,320		1
Becker.....	1,808	97,225	50	2,098		2
Benton.....	2,407	117,587	4,900	2,348		1
Big Stone.....	805	70,625	230	649		
Blue Earth.....	3,733	178,516	2,130	2,427	2	2
Brown.....	7,454	373,750	5,715	7,875	3	
Carver.....	8,163	546,462	8,248	8,256	1	2
Chippewa.....	2,446	98,430	4,755	1,841	1	
Chisago.....	5,331	280,992	1,687	5,323		2
Clay.....				3,531		1
Cottonwood.....	5,305	209,725	100	5,400	1	
Dakota.....	1,728	59,488		1,584		
Dodge.....	7,232	853,430	72,300	6,146	2	3
Douglas.....	6,983	416,704	3,528	6,969		
Fillmore.....	25,006	1,271,866	23,000	18,611		
Freeborn.....	10,766	913,080	19,000	12,621		15
Goodhue.....	16,279	991,755	114,735	14,440	4	8
Grant.....	3,435	153,993	770	210		
Hennepin.....	9,408	604,728	18,710	8,772		
Houston.....	9,912	628,650	4,340	9,074		2
Hubbard.....	500	13,562		400		
Isanti.....	3,867	238,917	1,315	4,281		
Jackson.....	995	31,850		966		
Kanabec.....	533	35,870	300	579		
Kandiyohi.....	7,038	325,097	100	7,207	2	4
Lac qui Parle.....	7,000		2,000	7,000	1	3
Lake.....	16	900		15		
Le Sueur.....	1,456	50,040		1,195		1
Lincoln.....	2,510	237,676	152	2,209	1	1
Lyon.....	1,608	123,495	120	1,554		
McLeod.....	7,027	292,661	5,521	7,247	2	4
Marshall.....	3,440	164,785	1,058	3,560		
Martin.....	5,952	560,602	3,425	6,356		1
Mille Lacs.....				985		1
Morrison.....	3,048	203,277	150	2,872		1
Mower.....	11,840	1,102,968	3,400	11,840	1	1
Nicollet.....	7,915	687,190	9,630	8,075	1	3
Nobles.....	4,080	332,360	350	4,634		3
Norman.....	5,921	380,676	1,925	5,822		2
Olustead.....	12,186	1,266,239	213,977	11,731	3	13
Otter Tail.....	6,288	438,281	18,900	6,265	2	1
Pine.....	781	54,022	715	679		
Ramsey.....	1,086	42,543	500	904		
Redwood.....	5,862	201,480	3,935	4,811	2	1
Renville.....	6,478	413,855	325	5,873		
Rice.....	10,181	558,301	5,460	10,138	1	11
Rock.....	3,639	343,833	225	3,595		1
St. Louis.....	501	19,719	37	542		
Scott.....	3,441	210,295	20,000	3,781	2	
Sherburne.....	3,347	178,995	600	3,287	1	1
Sibley.....	9,827	398,735	20,660	9,937	2	6
Stearns.....	11,455	535,463	58,710	11,137	2	4
Steele.....	8,451	638,964	376,607	8,698	4	9
Stevens.....	2,893	205,800	44,000	3,085	1	
Swift.....	4,012	230,465	1,430	3,996		
Todd.....	3,695	224,730	4,182	4,956		1
Traverse.....	1,281	92,390	645	1,174		
Wabasha.....	2,195	175,230	1,065	1,922		3
Wadena.....	1,088	89,957		1,010	1	
Waseca.....	4,467	277,000	300	3,323		2
Washington.....	4,629	577,855	1,625	4,496		
Watsonwan.....	5,873	386,009	375	6,096		1
Wilkin.....	811	54,120	120	802		
Winona.....	8,590	636,515	400	8,582		4
Wright.....	5,236	341,276	7,335	5,632		
Yellow Medicine.....	4,801	273,177	245	4,612		
Unreported towns and Co's estimated.	84,976	5,440,786	274,911	82,446	10	30
Totals.....	424,881	27,203,945	1,374,555	412,230	53	152



TABLE XVIII.—SHEEP AND WOOL.

Sheep and Wool for 1891 and 1892.

COUNTIES.	Fall, 1891.		Spring, 1892.	
	Number of sheep sheared.	Wool. pounds.	Number of sheep sheared.	Wool. pounds.
Aitkin.....	53	204	54	200
Anoka.....	1,100	5,531	1,590	9,084
Becker.....	738	3,920	1,561	8,155
Benton.....	1,015	2,285	1,003	5,843
Big Stone....	307	1,814	410	1,810
Blue Earth....	1,347	6,427	1,389	6,304
Brown.....	984	4,273	2,007	7,929
Carver.....	633	3,420	3,714	23,070
Chippewa.....	394	1,529	678	3,241
Ohisago.....	1,122	4,636	3,154	10,891
Clay.....			5,822	16,966
Cottonwood....	21,759	76,033	24,579	127,010
Dakota.....	211	1,555	518	3,893
Dodge.....	1,684	11,515	2,500	15,367
Douglas.....	2,562	10,019	4,861	22,218
Fillmore....	1,924	9,206	6,223	34,543
Freeborn....	1,089	6,377	2,380	13,752
Goodhue.....	4,859	39,901	7,520	50,796
Grant.....	781	2,344	23	68
Hennepin....	1,076	3,901	3,058	20,762
Houston.....	1,442	8,385	3,942	22,201
Hubbard.....	25	70	69	352
Isanti.....	2,220	10,215	5,973	16,788
Jackson....	244	1,240	1,138	4,636
Kanabec.....	427	986	419	988
Kandiyohi....	1,025	4,339	4,596	26,567
Lac qui Parle	4,000	12,000	4,500	15,000
Lake.....			33	95
Le Sueur....	275	975	271	1,112
Lincoln.....	1,688	9,123	5,501	29,114
Lyon.....	357	2,425	1,222	7,279
McLeod.....	1,286	8,068	2,766	14,490
Marshall....	1,946	5,810	2,170	8,947
Martin.....	4,213	28,751	4,390	23,450
Mille Lacs....			436	1,736
Morrison....	592	3,356	2,577	13,793
Mower.....	1,071	6,822	5,311	30,590
Nicollet....	2,730	18,430	3,295	20,385
Nobles.....	2,514	18,696	5,056	25,623
Norman.....	1,656	6,295	4,338	19,612
Olmsted....	3,284	25,905	8,865	39,074
Otter Tail....	2,706	10,447	4,398	17,937
Pine.....	224	1,101	245	1,008
Ramsey.....	145	1,148	214	1,729
Redwood....	2,171	12,308	4,449	25,189
Renville....	2,806	15,576	2,911	16,936
Rice.....	2,777	17,280	4,792	26,353
Rock.....	738	6,348	2,569	18,273
St. Louis....	45	182	70	221
Scott.....	40	184	855	3,288
Sherburne....	250	1,245	405	1,257
Sibley.....	1,579	8,641	3,984	18,731
Stearns....	1,313	5,876	4,222	19,396
Steele.....	1,463	15,438	2,989	18,790
Stevens....	50	250	2,620	12,820
Swift.....	1,258	6,727	1,758	9,333
Todd.....	1,347	5,874	2,969	11,822
Traverse....	114	447	118	580
Wabasha....	740	4,173	483	2,724
Wadena....	674	4,147	592	3,205
Waseca.....	949	6,419	1,191	8,875
Washington..	1,217	8,822	1,964	13,645
Watsonwan..	839	5,364	2,912	10,248
Wilkin.....	124	534	321	1,728
Winona.....	848	6,416	3,025	19,920
Wright.....	2,005	13,603	5,224	27,740
Yellow Medicine	1,950	9,509	3,350	16,653
Unreported towns and counties estimated	25,751	133,710	49,635	253,032
Totals.....	128,756	668,550	248,177	1,265,161

TABLE XIX.—BEES, HONEY AND MAPLE SYRUP.

Bees, Honey, Maple Syrup and Sugar crop of Minnesota for 1891 and 1892 by counties.

COUNTIES.	1891.		1892.	
	Hives. number.	Honey, pounds.	Maple syrup, gallons.	Maple sugar, pounds.
Aitkin.....			123	400
Anoka.....	58	190	10	300
Becker.....			130	10
Benton.....	280	15,695		
Big Stone.....	140			
Blue Earth.....	125	3,248		
Brown.....	94	2,124		
Carver.....	337	2,395	678	20
Chippewa.....	22	300	25	
Chisago.....	288	9,633	173	
Cottonwood.....	70	1,400		
Dakota.....	32	108		
Dodge.....	261	9,579		
Dougllass.....	40	600	216	50
Fillmore.....	964	14,168	82	600
Freeborn.....	773	5,999		
Goodhue.....	778	12,804		
Hennepin.....	1,074	17,525	1,079	3,200
Houston.....	515	7,870	1,037	430
Isanti.....	55	840	20	
Jackson.....	10	200		
Kandiyohi.....	184	4,074		
Lac qui Parle.....	35	1,000		
Le Sueur.....	61	550		
Lincoln.....	1	30		
Lyon.....	52	1,100		
McLeod.....	113	909	12	
Martin.....	435	6,168		
Mille Lacs.....			1,614	2,350
Morrison.....	117	3,120	260	1,434
Mower.....	270	4,137		
Nicollet.....	575	17,050	100	
Nobles.....	9	190	2	
Norman.....	2	20		
Olmsted.....	807	12,325	410	
Otter Tail.....	86	920	35	8
Ramsey.....	6	80		
Redwood.....	37	255		
Renville.....	51	146		
Rice.....	1,251	16,810	500	460
Rock.....	74	1,710	6	
St. Louis.....	93	6,550		
Scott.....	151	1,850		
Sherburne.....	208	5,815	30	24
Sibley.....	555	7,173	100	400
Searns.....	395	11,810		
Steele.....	264	5,826	10	
Stevens.....	66	1,550		
Todd.....	42	500	877	702
Wabasha.....	256	5,240		75
Wadena.....	2	40		
Waseca.....	163	1,240		
Washington.....	831	6,980		
Watsonwan.....	57	543		
Wilkin.....			51	
Winona.....	1,426	16,769		19
Wright.....	544	15,515	1,414	590
Yellow Medicine.....	132	2,325		
Unreported towns and counties estimated	3,816	66,249	2,248	2,768
Totals.....	19,083	331,247	11,242	13,840

TABLE XX.—POPULATION IN MINNESOTA.  
SUMMARY BY COUNTIES.

COUNTIES.	State Census 1885.	POPULATION.		INCREASE.	
		1890	1880	Number.	Per cent
The state.....	1,117,798	1,301,826	780,773	521,053	66.74
Aitkin.....	1,388	2,462	366	2,096	572.68
Anoka.....	10,089	9,884	7,108	2,776	39.05
Becker.....	7,433	9,401	5,218	4,183	80.16
Beltrami.....	111	312	10	302	3,020.00
Benton.....	4,721	6,284	3,012	3,272	108.63
Big Stone.....	4,697	5,722	3,688	2,034	55.15
Blue Earth.....	26,462	29,210	22,889	6,321	27.62
Brown.....	13,976	15,817	12,018	3,799	31.61
Carlton.....	3,189	5,272	1,230	4,042	328.62
Carver.....	15,965	16,532	14,140	2,392	16.92
Cass.....	1,135	1,247	486	761	156.58
Chippewa.....	6,561	8,555	5,408	3,147	58.19
Chisago.....	9,765	10,359	7,982	2,377	28.78
Clay.....	10,362	11,517	5,887	5,630	95.63
Cook.....	322	98	65	33	50.77
Cottonwood.....	5,894	7,412	5,533	1,879	33.96
Crow Wing.....	8,743	8,852	2,319	6,533	281.72
Dakota.....	18,590	20,240	17,391	2,849	16.38
Dodge.....	10,487	10,864	11,314	480	4.23
Douglas.....	12,924	14,606	9,130	5,476	59.98
Faribault.....	15,163	16,708	13,016	3,692	28.37
Fillmore.....	26,677	25,966	28,162	2,196	7.80
Freeborn.....	17,564	17,962	16,069	1,893	11.78
Goodhue.....	31,113	28,806	29,651	845	2.85
Grant.....	5,197	6,875	3,004	3,871	128.86
Hennepin.....	148,737	185,294	67,013	118,281	176.50
Houston.....	15,482	14,653	16,392	1,679	10.28
Hubbard.....	853	1,412	.....	1,412	.....
Isanti.....	7,031	7,607	5,063	2,544	50.25
Itasca.....	273	743	124	619	499.19
Jackson.....	6,110	8,924	4,806	4,118	85.68
Kanabec.....	1,109	1,579	505	1,071	212.67
Kandiyohi.....	12,849	13,997	10,159	3,838	37.78
Kittson.....	3,462	5,387	905	4,482	495.25
Lac qui Parle.....	7,842	10,382	4,891	5,491	112.27
Lake.....	453	1,299	106	1,193	1,125.47
Le Sueur.....	18,559	19,057	16,103	2,954	18.34
Lincoln.....	4,362	5,691	2,945	2,746	93.24
Lyon.....	7,936	9,501	6,257	3,244	51.85
McLeod.....	15,311	17,026	12,342	4,684	37.95
Marshall.....	5,560	9,130	992	8,138	820.36
Martin.....	6,426	9,403	5,249	4,154	79.14
Meeker.....	14,501	15,456	11,739	3,717	31.66
Mille Lacs.....	1,897	2,845	1,501	1,344	89.54
Morrison.....	9,406	13,325	5,875	7,450	126.81
Nower.....	15,277	18,019	16,799	1,220	7.26
Murray.....	5,046	6,692	3,604	3,088	85.68
Nicollet.....	13,434	13,382	12,333	1,049	8.51
Nobles.....	5,639	7,958	4,435	3,523	79.44
Norman.....	8,335	10,618	.....	10,618	.....
Olmsted.....	20,518	19,806	21,543	1,737	8.06
Otter Tail.....	31,520	34,232	18,675	15,557	83.30
Pine.....	2,186	4,052	1,365	2,687	196.85
Pipestone.....	3,956	5,132	2,092	3,040	145.32
Polk.....	23,475	30,192	11,433	18,758	16.41
Pope.....	8,707	10,032	5,874	4,158	70.79
Ramsey.....	116,227	139,796	45,890	93,906	204.62
Redwood.....	6,488	9,386	5,375	4,011	74.62
Renville.....	13,153	17,099	10,791	6,308	58.46
Rice.....	24,941	23,068	22,481	1,487	6.61
Rock.....	5,239	6,817	3,660	3,148	85.80
St. Louis.....	20,453	44,862	4,504	40,358	896.05
Scott.....	14,181	13,831	13,516	315	2.33
Sherburne.....	5,647	5,908	3,855	2,053	53.26
Sibley.....	13,126	15,199	10,637	4,562	42.89
Stearns.....	28,712	34,844	21,956	12,888	58.70
Steele.....	12,733	13,232	12,460	772	6.20
Stevens.....	4,511	5,251	3,911	1,340	34.26
Swift.....	8,373	10,161	7,473	2,688	35.97
Todd.....	9,643	12,930	6,133	6,797	110.83
Traverse.....	2,860	4,516	1,507	3,009	199.67
Wabasha.....	17,990	16,972	18,206	1,234	6.78
Wadena.....	3,565	4,053	2,080	1,973	94.86
Waseca.....	13,342	13,313	12,385	928	7.49
Washington.....	29,751	25,992	19,563	6,429	32.86
Watsonwan.....	5,995	7,746	5,104	2,642	51.76
Wilkin.....	3,734	4,346	1,906	2,440	128.02
Winona.....	31,928	33,797	27,197	6,600	24.27
Wright.....	22,790	24,164	18,104	6,060	33.47
Yellow Medicine.....	7,863	9,854	5,884	3,970	67.47



TABLE XXI.—HORSES, MULES AND ASSES.

(From returns made to State Auditor for taxation 1892.)

COUNTIES.	One year old.	Two years old.	Three y'rs old and over
Aitkin .....	27	22	399
Anoka .....	312	362	2,132
Becker .....	376	423	2,960
Beltrami .....	1	1	19
Benton .....	197	222	1,639
Big Stone .....	489	409	3,119
Blue Earth .....	1,571	1,589	9,713
Brown .....	976	1,008	5,675
Carlton .....	10	19	557
Carver .....	627	584	4,460
Cass .....	16	10	336
Chippewa .....	750	690	2,647
Chisago .....	276	250	5,711
Clay .....	849	883	4,512
Cottonwood .....	606	579	1,276
Crow Wing .....	57	66	6,441
Dakota .....	1,081	1,000	4,833
Dodge .....	973	1,050	5,429
Douglas .....	719	745	7,812
Faribault .....	1,501	1,520	9,440
Fillmore .....	2,493	2,368	7,142
Freeborn .....	1,431	1,622	8,908
Goodhue .....	1,542	1,566	3,977
Grant .....	643	555	15,485
Hennepin .....	828	845	5,148
Houston .....	1,059	1,007	778
Hubbard .....	76	69	2,075
Isanti .....	213	222	164
Itasca .....	6	97	5,316
Jackson .....	794	644	284
Kanabec .....	13	6	6,501
Kandiyohi .....	1,036	1,081	3,046
Kittson .....	512	823	6,544
Lac qui Parle .....	936	926	19
Lake .....			5,162
Le Sueur .....	705	699	3,090
Lincoln .....	435	396	5,018
Lyon .....	787	793	6,150
McLeod .....	986	1,029	4,107
Marshall .....	566	548	6,148
Martin .....	1,134	1,008	6,084
Meeker .....	875	843	635
Mille Lacs .....	65	69	3,439
Morrison .....	403	399	7,572
Mower .....	1,601	1,439	4,559
Murray .....	631	607	5,415
Nicollet .....	1,199	1,146	5,727
Nobles .....	881	799	5,063
Norman .....	668	744	7,918
Olmsted .....	1,641	1,685	11,442
Otter Tail .....	1,676	1,649	628
Pine .....	41	26	3,297
Pipestone .....	439	424	11,930
Polk .....	1,525	1,505	5,290
Pope .....	1,101	923	6,653
Ramsey .....	126	136	6,648
Redwood .....	985	932	8,428
Renville .....	1,853	2,084	6,050
Rice .....	961	982	4,570
Rock .....	646	660	2,647
St. Louis .....	35	28	4,201
Scott .....	522	499	2,244
Sherburne .....	270	319	6,630
Sibley .....	1,089	1,066	9,954
Stearns .....	1,559	1,489	4,733
Steele .....	860	925	3,188
Stevens .....	474	492	5,421
Swift .....	816	791	3,719
Todd .....	463	416	2,889
Traverse .....	500	493	5,120
Wabasha .....	948	910	1,387
Wadena .....	149	172	4,944
Waseca .....	921	905	4,176
Washington .....	484	410	4,641
Watsonwan .....	610	559	3,223
Wilkin .....	410	367	6,166
Winona .....	1,010	1,020	6,958
Wright .....	1,129	1,298	6,152
Yellow Medicine .....	856	798	
Totals .....	58,731	57,782	372,990

TABLE XXII.—CATTLE, SHEEP AND HOGS.

Cattle, Sheep and Hogs for 1892. From returns made to the auditor for taxation.

COUNTIES.	CATTLE.					SHEEP.	HOGS.
	One yearold.	Two yrs. old.	Cows.	Working oxen.	All other cattle 3 yrs. old & over.		
Aitkin.....	270	217	617	590	43	113	215
Anoka.....	1,581	1,460	4,464	52	283	1,937	1,555
Becker.....	2,403	1,683	5,370	867	355	4,214	1,366
Beltrami.....	41	25	75	27	9	33	14
Benton.....	1,617	1,510	3,122	289	460	1,343	1,491
Big Stone.....	1,549	1,140	2,789	373	189	1,466	864
Blue Earth.....	4,994	3,565	11,920	6	334	5,617	11,372
Brown.....	3,770	2,575	9,388	23	175	2,813	4,047
Carlton.....	98	90	479	197	15	68	74
Carver.....	3,622	3,674	8,656	45	310	4,425	6,159
Cass.....	250	193	420	254	50	384	83
Chippewa.....	2,595	1,883	4,802	130	331	3,291	1,565
Chisago.....	3,049	2,459	6,573	291	580	3,806	1,997
Clay.....	3,189	2,296	6,541	518	399	8,137	2,100
Cottonwood.....	3,321	2,263	5,564	240	214	24,563	2,239
Crow Wing.....	570	445	1,601	326	94	430	481
Dakota.....	2,833	2,917	10,124	15	2,423	9,905	5,649
Dodge.....	4,841	3,269	9,745	.....	347	5,185	4,036
Douglas.....	3,357	2,456	7,140	623	416	5,020	2,623
Faribault.....	6,216	5,086	12,138	8	563	5,618	8,559
Fillmore.....	8,723	6,040	17,692	4	495	7,396	15,481
Freeborn.....	8,956	6,098	17,923	33	591	4,342	9,156
Goodhue.....	5,974	4,836	18,192	11	468	8,848	8,460
Grant.....	2,006	1,445	4,282	547	259	3,195	1,464
Hennepin.....	2,147	1,772	13,242	22	375	4,073	5,445
Houston.....	5,712	4,967	11,030	16	542	3,953	13,435
Hubbard.....	290	245	552	114	76	365	415
Isanti.....	2,118	1,608	4,605	382	440	4,290	1,382
Itasca.....	12	2	45	561	1	.....	38
Jackson.....	4,839	3,600	7,748	276	406	11,114	3,258
Kanabec.....	296	217	502	243	45	499	214
Kandiyohi.....	6,051	4,803	10,230	306	762	6,257	1,836
Kittson.....	1,650	1,269	3,262	983	294	1,932	1,006
Lac qui Parle.....	3,233	2,567	6,442	449	383	3,540	2,727
Lake.....	6	5	89	4	2	41	13
Le Sueur.....	2,546	1,983	7,044	32	231	2,921	8,431
Lincoln.....	1,882	1,340	3,461	663	220	8,114	1,114
Lyon.....	2,505	1,836	5,231	231	262	9,874	2,132
McLeod.....	3,435	2,882	10,878	148	230	4,566	5,201
Marshall.....	2,339	1,857	4,085	1,619	815	2,957	1,802
Martin.....	4,205	3,165	8,058	77	638	7,126	6,889
Meeker.....	3,611	2,699	8,344	176	400	3,327	2,271
Mille Lacs.....	525	404	977	163	82	502	476
Morrison.....	2,214	1,953	4,786	701	408	3,439	2,692
Mower.....	6,150	4,103	13,069	1	296	5,662	5,798
Murray.....	2,364	1,460	4,820	415	152	6,783	1,964
Nicollet.....	3,255	2,621	8,136	3	215	3,145	5,661
Nobles.....	3,267	2,198	5,694	249	251	8,688	3,782
Norman.....	3,462	2,424	6,898	799	462	5,714	2,065
Olmsted.....	6,609	5,142	13,901	1	468	14,401	10,393
Otter Tail.....	7,154	5,269	15,185	1,468	823	11,001	6,445
Pine.....	476	339	1,169	481	49	355	574
Pipestone.....	1,119	807	2,675	34	71	2,604	1,257
Polk.....	5,942	4,617	13,905	3,578	1,269	9,058	5,136
Pope.....	5,007	4,111	7,455	453	605	3,805	2,086
Ramsey.....	197	181	4,360	7	66	1,061	828
Redwood.....	4,436	3,469	8,091	200	447	8,960	2,680
Renville.....	5,466	4,151	11,366	229	310	6,025	4,325
Rice.....	4,064	3,089	11,836	30	335	5,589	5,541
Rock.....	2,521	1,939	4,889	40	179	3,379	5,583
St Louis.....	141	69	1,872	99	16	1,109	401
Scott.....	2,346	2,107	7,285	8	303	3,477	5,624
Sherburne.....	2,476	222	332	85	503	837	1,786
Sibley.....	3,733	2,603	11,159	30	293	4,675	6,618
Stearns.....	7,072	5,430	14,611	621	689	5,829	8,291
Steele.....	4,672	3,754	11,342	8	513	6,219	5,488
Stevens.....	1,537	1,266	3,046	375	299	2,560	945
Swift.....	3,682	2,929	6,286	371	595	2,997	2,120
Todd.....	2,624	1,919	5,733	920	286	4,541	2,578
Traverse.....	894	558	2,035	384	135	343	771
Wabasha.....	3,724	2,973	7,538	.....	175	5,967	8,185
Wadena.....	568	424	1,549	259	97	1,503	682
Waseca.....	3,915	2,561	8,469	9	253	4,622	4,777
Washington.....	1,710	1,606	6,272	22	281	2,934	3,688
Watsonwan.....	2,640	1,711	7,368	52	282	5,010	4,303
Wilkin.....	1,202	905	2,565	358	177	2,305	917
Winona.....	5,323	4,410	9,685	.....	191	3,969	7,697
Wright.....	4,172	3,335	11,107	364	445	9,828	6,414
Yellow Medicine.....	3,729	2,654	7,044	491	402	5,714	2,781
Totals.....	244,191	186,438	539,075	26,079	27,948	359,223	288,819

TABLE XXIII.—ASSESSED VALUATION OF PERSONAL  
PROPERTY IN MINNESOTA.

Total value of all personal property, as returned by the state board.

Counties.	Amount.	Counties.	Amount.
Aitkin.....	\$128,496	Meeker.....	\$891,088
Anoka.....	678,043	Mille Lac.....	195,159
Becker.....	565,240	Morrison.....	701,018
Beltrami.....	10,796	Mower.....	1,399,677
Benton.....	260,154	Murray.....	559,184
Big Stone.....	420,481	Nicollet.....	1,036,803
Blue Earth.....	1,954,029	Nobles.....	817,984
Brown.....	976,024	Norman.....	811,597
Carlton.....	655,243	Olmsted.....	2,009,220
Carver.....	858,854	Otter Tail.....	1,667,281
Cass.....	128,989	Pine.....	293,689
Chippewa.....	690,572	Pipestone.....	522,816
Chisago.....	683,606	Polk.....	2,184,005
Clay.....	938,339	Pope.....	729,866
Cottonwood.....	667,262	Ramsey.....	17,376,442
Crow Wing.....	557,025	Redwood.....	943,502
Dakota.....	1,519,080	Renville.....	1,158,052
Dodge.....	954,360	Rice.....	1,849,287
Douglas.....	1,090,508	Rock.....	699,887
Faribault.....	1,349,768	St. Louis.....	6,080,222
Fillmore.....	2,195,367	Scott.....	870,623
Freeborn.....	1,227,142	Sherburne.....	331,719
Goodhue.....	2,615,989	Sibley.....	957,979
Grant.....	592,744	Stearns.....	2,191,588
Hennepin.....	21,262,745	Steele.....	1,233,923
Houston.....	1,152,229	Stevens.....	498,041
Hubbard.....	157,553	Swift.....	751,647
Isanti.....	343,113	Todd.....	635,092
Itasca.....	1,018,800	Traverse.....	353,130
Jackson.....	647,655	Wabasha.....	1,167,891
Kanabec.....	61,080	Wadena.....	347,469
Kandiyohi.....	1,168,391	Waseca.....	800,075
Kittson.....	468,147	Washington.....	2,593,318
Lac qui Parle.....	1,047,501	Watsonwan.....	698,233
Lake.....	39,496	Wilkin.....	448,294
Le Sueur.....	914,103	Winona.....	3,088,947
Lincoln.....	421,490	Wright.....	1,442,761
Lyon.....	882,722	Yellow Medicine.....	995,606
McLeod.....	1,231,003		
Marshall.....	609,509		
Martin.....	797,113		
		Total.....	\$114,356,876





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CHAPTER II.

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COUNTY STATISTICS.

COMPILED FROM

OFFICIAL REPORTS FOR 1891—1892.

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## CONTENTS OF THIS CHAPTER.

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COUNTIES IN ALPHABETICAL ORDER, SHOWING

County seat and population, 1890.

Crop reports and acreage, 1891—1892.

Number of farms, 1892.

Farm stock, 1892.

Number of cheese factories, 1892

Number of creameries, 1892

Personal property, 1892.



AITKIN COUNTY.

(Population, 1890, 2,462 ; County seat, Aitkin.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891,	Yield per acre.	Acres, 1892.
Wheat.....	37	Bushels..... 982	26.50	103
Oats.....	450	"..... 16,980	37.70	636
Corn.....	135	"..... 5,261	39.00	107
Barley.....	33	"..... 878	26.66	44
Rye.....	11	"..... 380	34.50	9
Buckwheat.....	5	"..... 100	20.00	9
Potatoes.....	199	"..... 25,428		217
Beans.....	87	"..... 1,586		92
Sugar cane.....		Syrup, gallons.....		3
Cultivated hay.....	88	Tons..... 164		159
Flax seed.....		Bushels.....		203
Other products.....	225			
Total acres cultivated.....	1,270			1,582
Acres increase in 1892.....	312			

MISCELLANEOUS 1891.

Wild hay, tons.....	4.118	Maple syrup, gallons, 1892....	123
Timothy seed, bushels.....		Butter, pounds.....	30,316
Clover seed, bushels.....		Cheese, pounds.....	3,500
Apple trees, growing.....	312	Wool, pounds, fall '91.....	204
Apple trees, bearing.....	50	Wool, pounds, spring '92.....	200
Apples, bushels.....	23	Land surface, acres, 1892.....	1,165,691.90
Grape vines, bearing.....	200	Water surface, acres, 1892.....	111,090.48
Grapes, pounds.....	300	Number cheese factories, 1892.....	
Tobacco, pounds.....	75	Number of creameries, 1892.....	
Bees, number of hives.....		Number of farms, 1892.....	215
Honey, pounds.....			

FARM STOCK, 1892.

Number of milch cows.....	617
Number of horses, all ages.....	948
Number of cattle, all ages, including milch cows.....	1,737
Number of sheep.....	113
Number of hogs.....	215
Personal property.....	\$128,496

ANOKA COUNTY.

(Population 1890, 9,884 ; County Seat, Anoka.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	2,001	Bushels..... 32,561	16.30	3,965
Oats.....	5,283	"..... 161,256	30.50	6,921
Corn.....	5,882	"..... 139,090	23.60	5,290
Barley.....	22	"..... 374	17.00	44
Rye.....	1,912	"..... 26,701	35.40	2,757
Buckwheat.....	236	"..... 2,702	11.00	249
Potatoes.....	2,616	"..... 289,142		2,707
Beans.....	236	"..... 1,872		211
Sugar cane.....	64	Syrup, gallons..... 611		20
Cultivated hay.....	2,526	Tons..... 2,560		1,881
Flax seed.....	20	Bushels..... 90	4.50	5
Other products.....	229			192
Total acres cultivated.....	21,057			24,242
Acres increase in 1892.....	3,185			

MISCELLANEOUS, 1891.

Wild hay, tons.....	14.713	Maple syrup, gallons, 1892.....	10
Timothy seed, bushels.....	12	Butter, pounds.....	218,662
Apple trees, growing.....	601	Cheese, pounds.....	127
Apple trees, bearing.....	391	Wool, pounds, fall '91.....	5,531
Apples, bushels.....	192	Wool, pounds, spring '92.....	9,084
Grape vines, bearing.....	8	Land surface, acres, 1892.....	271,925.66
Grapes, pounds.....	30	Water surface, acres, 1892.....	12,860.82
Tobacco, pounds.....	402	Number of creameries, 1892.....	1
Bees, number of hives.....	58	Number of farms, 1892.....	628
Honey, pounds.....	190		

## FARM STOCK, 1892.

Number of milch cows.....	4,464
Number of horses, all ages.....	2,806
Number of cattle, all ages, including milch cows.....	7,840
Number of sheep.....	1,973
Number of hogs.....	1,555
Personal property.....	\$678,045

## BECKER COUNTY.

(Population, 1890, 9,401, County seat, Detroit.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat .....	16,289	Bushels ..... 307,527	18.90	18,017
Oats.....	3,733	" ..... 127,347	34.10	3,901
Corn .....	84	" ..... 2,541	30.30	123
Barley .....	419	" ..... 14,024	33.50	638
Rye .....	67	" ..... 1,182	17.60	44
Buckwheat.....	1	" ..... 60	60.00	.....
Potatoes .....	282	" ..... 34,815	.....	253
Beans .....	2	" ..... 37	.....	1
Cultivated hay .....	1,126	Tons ..... 1,631	.....	1,281
Flax seed.....	355	Bushels ..... 5,409	15.20	14
Other products.....	41	.....	.....	50
Total acres cultivated.....	22,399	.....	.....	24,322
Acres increase in 1892.....	1,923	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	9,673	Cheese, pounds .....	50
Timothy seed, bushels.....	33	Wool, pounds, fall '91.....	3,920
Apple trees, growing.....	340	Wool, pounds, spring '92.....	8,135
Apple trees, bearing.....	41	Land surface, acres, 1892.....	1,836,678.09
Apples, bushels.....	2	Water surface, acres, 1892.....	88,073.66
Tobacco, pounds.....	30	Number of creameries, 1892.....	2
Maple syrup, gallons, 1892.....	130	Number of farms, 1892.....	504
Butter, pounds.....	97,225		

## FARM STOCK, 1892.

Number of milch cows.....	5,370
Number of horses, all ages.....	3,759
Number of cattle, all ages, including milch cows.....	10,678
Number of sheep.....	4,214
Number of hogs.....	1,366
Personal property.....	\$565,240

## BELTRAMI COUNTY.

(Population, 1890, 312.)

## FARM STOCK, 1892.

Number of milch cows.....	75
Number of horses, all ages.....	21
Number of cattle, all ages, including milch cows.....	177
Number of sheep.....	33
Number of hogs.....	14
Personal property.....	\$10,796

BENTON COUNTY.

(Population, 1890, 6,284; County Seat, Sauk Rapids.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	13,079	Bushels..... 218,566	16 70	14,464
Oats.....	5,655	"..... 183,405	32 40	5,988
Corn.....	2,679	"..... 59,445	22 20	2,038
Barley.....	121	"..... 4,028	33 30	227
Rye.....	1,258	"..... 17,744	14 10	1,610
Buckwheat.....	212	"..... 56		20
Potatoes.....	480	"..... 55,686		392
Beans.....	19	"..... 176		24
Sugar cane.....	4	Syrup, gallons..... 240		4
Cultivated hay.....	979	Tons..... 1,057		837
Flax seed.....	62	Bushels..... 1,095	17 70	9
Other products.....	93			92
Total acres cultivated.....	24,641			25,705
Acres increase in 1892.....	1,064			

MISCELLANEOUS, 1891.

Wild hay, tons.....	19,695	Honey, pounds.....	15,695
Timothy seed, bushels.....	94	Butter, pounds.....	117,587
Apple trees, growing.....	825	Cheese, pounds.....	4,900
Apple trees, bearing.....	213	Wool, pounds, fall '91.....	2,285
Apples, bushels.....	137	Wool, pounds, spring '92.....	5,843
Grape vines, bearing.....	196	Land surface, acres, 1892.....	257,798.90
Grapes, pounds.....	501	Water surface, acres, 1892.....	2,275.41
Tobacco, pounds.....	456	Number of creameries, 1892.....	1
Bees, number of hives.....	280	Number of farms, 1892.....	467

FARM STOCK, 1892.

Number of milch cows.....	3,122
Number of horses, all ages.....	2,058
Number of cattle, all ages, including milch cows.....	6,998
Number of sheep.....	1,343
Number of hogs.....	1,491
Personal property.....	\$260,154

BIG STONE COUNTY.

(Population, 1890, 5,722, County Seat, Ortonville.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	20,840	Bushels..... 345,527	16 60	23,556
Oats.....	4,839	"..... 131,984	27 30	5,304
Corn.....	678	"..... 14,175	20 90	648
Barley.....	407	"..... 10,901	26 80	579
Buckwheat.....		".....		3
Potatoes.....	101	"..... 10,210		106
Beans.....		".....		4
Cultivated hay.....	107	Tons..... 144		100
Flax seed.....	2,041	Bushels..... 26,188	12 80	462
Other products.....	1			20
Total acres cultivated.....	29,014			30,782
Acres increase in 1892.....	1,768			

MISCELLANEOUS.

Wild hay, tons.....	8,582	Cheese, pounds.....	230
Apple trees, growing.....	964	Wool, pounds, fall '91.....	1,814
Apple trees, bearing.....	184	Wool, pounds, spring '92.....	1,810
Apples, bushels.....	78	Land surface, acres, 1892.....	316,497.42
Grape vines, bearing.....	4	Water surface, acres, 1892.....	26,737.33
Bees, number of hives.....	140	Number of farms, 1892.....	239
Butter, pounds.....	70,625		



## FARM STOCK, 1892.

Number of milch cows.....	2,789
Number of horses, all ages.....	4,017
Number of cattle, all ages, including milch cows.....	6,040
Number of sheep.....	1,466
Number of hogs.....	864
Personal property.....	\$420.481

## BLUE EARTH COUNTY.

(Population, 1890, 29,210, County seat, Mankato.)

## AGRICULTURE.

PRODUCT.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	30,001	Bushels..... 522,844	17.40	36,160
Oats.....	18,374	"..... 672,978	36.60	19,092
Corn.....	14,986	"..... 483,460	32.30	14,194
Barley.....	2,339	"..... 55,588	23.80	2,761
Rye.....	28	"..... 780	27.90	44
Buckwheat.....	2	"..... 60	30.00	.....
Potatoes.....	524	"..... 45,015	.....	533
Beans.....	10	"..... 101	.....	12
Sugar cane.....	27	Syrup, gal'ns 1,667	.....	44
Cultivated hay.....	2,240	Tons..... 3,585	.....	3,068
Flax seed.....	6,498	Bushels..... 69,116	10.60	4,477
Other products.....	53	.....	.....	57
Total acres cultivated.....	75,082	.....	.....	80,442
Acres increase in 1892.....	5,366	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	14,369	Butter, pounds.....	178,516
Timothy seed, bushels.....	1,432	Cheese, pounds.....	2,130
Clover seed, bushels.....	583	Wool, pounds, fall '91.....	6,427
Apple trees, growing.....	3,100	Wool, pounds, spring '92.....	6,304
Apple trees, bearing.....	1,131	Land surface, acres, 1892.....	475,582.34
Apples, bushels.....	647	Water surface, acres, 1892.....	21,619.39
Grape vines, bearing.....	931	Number of cheese factories, '92.....	2
Grapes, pounds.....	4,475	Number of creameries, 1892.....	2
Bees, number of hives.....	125	Number of farms, 1892.....	736
Honey, pounds.....	3,248	.....	.....

## FARM STOCK, 1892.

Number of milch cows.....	11,920
Number of horses, all ages.....	11,873
Number of cattle, all ages, including milch cows.....	20,819
Number of sheep.....	5,617
Number of hogs.....	11,372
Personal property.....	\$1,954.029

## BROWN COUNTY.

(Population, 1890, 15,811; County seat, New Ulm.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	73,471	Bushels..... 1,246,705	17.00	80,453
Oats.....	26,714	"..... 689,822	25.80	20,898
Corn.....	19,694	"..... 400,232	20.30	13,828
Barley.....	1,231	"..... 30,764	25.00	2,013
Rye.....	105	"..... 5,658	53.90	99
Buckwheat.....	11	"..... 148	13.50	14
Potatoes.....	727	"..... 44,834	.....	897
Beans.....	14	"..... 250	.....	8
Sugar cane.....	78	Syrup, gal's.. 6,350	.....	49
Cultivated hay.....	641	Tons..... 1,007	.....	1,343
Flax seed.....	11,854	Bushels..... 143,335	12.10	3,704
Other products.....	148	.....	.....	199
Total acres cultivated.....	134,688	.....	.....	123,505

MISCELLANEOUS, 1891.

Wild hay, tons.....	44,645	Honey, pounds.....	2,124
Timothy seed, bushels.....	531	Butter, pounds.....	373,750
Clover seed, bushels.....	10	Cheese, pounds.....	5,715
Apple trees, growing.....	4,836	Wool, pounds, fall '91.....	4,273
Apple trees, bearing.....	1,295	Wool, pounds, spring '92.....	7,929
Apples, bushels.....	772	Land surface, acres, 1892.....	387,733.30
Grape vines, bearing.....	1,511	Water surface, acres, 1892.....	6,937.52
Grapes, pounds.....	3,670	No. of cheese factories, 1892.....	3
Tobacco, pounds.....	365	Number of farms, 1892.....	1,383
Bees, number of hives.....	94		

FARM STOCK, 1892.

Number of milch cows.....	9,388
Number of horses, all ages.....	7,659
Number of cattle, all ages, including milch cows.....	15,931
Number of sheep.....	2,813
Number of hogs.....	4,047
Personal property.....	\$976,034

CARLTON COUNTY.

(Population 1890, 5,272; County seat, Carlton.)

FARM STOCK, 1892.

Number of milch cows.....	479
Number of horses, all ages.....	586
Number of cattle, all ages, including milch cows.....	879
Number of sheep.....	68
Number of hogs.....	74
Personal property.....	\$655,243

CARVER COUNTY.

(Population 1890, 16,532; County seat, Chaska.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892
Wheat.....	39,758	Bushels..... 938,646	23.60	40,569
Oats.....	7,867	"..... 410,034	52.10	7,630
Corn.....	11,518	"..... 410,884	35.70	11,770
Barley.....	326	"..... 11,775	36.10	370
Rye.....	707	"..... 18,800	26.60	1,064
Buckwheat.....	6	"..... 182	30.30	3
Potatoes.....	1,089	"..... 104,325		1,111
Beans.....	8	"..... 65		4
Sugar cane.....	134	Syrup, gallons..... 12,843		37
Cultivated hay.....	1,902	Tons..... 2,581		1,910
Flax seed.....	19	Bushels..... 85	4.50	10
Other products.....	159			205
Total acres cultivated.....	63,493			64,743
Acres increase in 1892.....	1,250			

MISCELLANEOUS, 1891.

Wild hay tons.....	21,494	Maple syrup, gallons, 1892.....	678
Timothy seed, bushels.....	1	Butter, pounds.....	546,462
Clover seed, bushels.....	6	Cheese, pounds.....	8,248
Apple trees, growing.....	4,577	Wool, pounds, fall 1891.....	3,420
Apple trees, bearing.....	2,018	Wool, pounds, spring 1892.....	23,070
Apples, bushels.....	2,329	Land surface, acres, 1892.....	226,652.28
Grape vines, bearing.....	3,466	Water surface, acres, 1892.....	14,307.30
Grapes, pounds.....	9,945	No. of cheese factories, 1892.....	1
Tobacco, pounds.....	226	No. of creameries, 1892.....	2
Bees, number of hives.....	337	No. of farms, 1892.....	1,677
Honey, pounds.....	2,395		

FARM STOCK, 1892.

Number of milch cows.....	8,656
Number of horses, all ages.....	5,671
Number of cattle, all ages, including milch cows.....	16,307
Number of sheep.....	4,425
Number of hogs.....	6,159
Personal property.....	\$858,854

## CASS COUNTY.

Population, 1890, 1,247.

## FARM STOCK, 1892.

Number of milch cows.....	420
Number of horses, all ages.....	371
Number of cattle, all ages, including milch cows.....	1,167
Number of sheep.....	384
Number of hogs.....	83
Personal property.....	\$128,989

## CHIPPEWA COUNTY.

Population, 1890, 8,555; County seat, Montevideo.

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres 1892.
Wheat.....	36,165	Bushels..... 835,759	23.10	54,064
Oats.....	9,640	"..... 289,553	30.00	10,905
Corn.....	2,641	"..... 44,039	16.70	2,218
Barley.....	1,222	"..... 31,373	25.70	2,342
Rye.....	23	"..... 180	7.80	10
Buckwheat.....		".....		1
Potatoes.....	197	"..... 15,227		201
Beans.....	1	"..... 5		5
Sugar cane.....	11	Syrup, gall's..... 176		8
Cultivated hay.....	1,195	Tons..... 1,597		1,136
Flax seed.....	5,299	Bushels..... 44,100	8.30	1,823
Other products.....	32			60
Total acres cultivated.....	56,426			72,773
Acres increase in 1892.....	16,347			

## MISCELLANEOUS, 1891.

Wild hay, tons.....	20,534	Maple syrup, gallons, 1892.....	25
Timothy seed, bushels.....	118	Butter, pounds.....	98,430
Clover seed, bushels.....	2	Cheese, pounds.....	4,755
Apple trees, growing.....	1,062	Wool, pounds, fall 1891.....	1,529
Apple trees, bearing.....	236	Wool, pounds, spring 1892.....	3,241
Apples, bushels.....	130	Land surface, acres, 1892.....	370,269.93
Grape vines, bearing.....	23	Water surface, acres, 1892.....	10,027.23
Grapes, pounds.....	2	Number of cheese factories, '92.....	1
Bees, number of hives.....	22	Number of farms, 1892.....	285
Honey, pounds.....	300		

## FARM STOCK, 1892.

Number of milch cows.....	4,802
Number of horses, all ages.....	1,449
Number of cattle, all ages, including milch cows.....	9,741
Number of sheep.....	3,291
Number of hogs.....	1,565
Personal property.....	\$690,572

## CHISAGO COUNTY.

(Population, 1890, 10,359; county seat, Centre City.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	7,466	Bushels..... 132,478	17.70	8,447
Oats.....	6,433	"..... 254,778	39.60	7,759
Corn.....	2,314	"..... 54,366	23.50	2,350
Barley.....	200	"..... 4,049	24.70	299
Rye.....	887	"..... 13,815	15.60	907
Buckwheat.....	46	"..... 745	16.20	41
Potatoes.....	4,474	"..... 562,641		4,616
Beans.....	70	"..... 996		59
Sugar cane.....	9	Syrup, gallons..... 794		6
Cultivated hay.....	5,283	Tons..... 6,952		5,080
Flax seed.....		Bushels.....		1
Other products.....	78			73
Total acres cultivated.....	27,260			29,638
Acres increase in 1892.....	2,378			



MISCELLANEOUS, 1891.

Wild hay, ton.....	12,160	Honey, pounds .....	9,633
Timothy seed, bushels.....	59	Maple syrup, gallons, 1892.....	173
Clover seed, bushels.....	115	Butter, pounds .....	280,992
Apple trees, growing.....	2,006	Cheese, pounds .....	1,687
Apple trees, bearing .....	773	Wool, pounds, fall 1891.....	4,636
Apples, bushels.....	579	Wool, pounds, spring 1892.....	10,891
Grape vines, bearing.....	29	Land surface, acres, 1892.....	269,451.12
Grapes, pounds.....	50	Water surface, acres, 1892.....	19,611.38
Tobacco, pounds.....	50	Number of creameries, 1892.....	2
Bees, number of hives.....	288	Number of farms, 1892.....	1,276

FARM STOCK, 1892.

Number of milch cows.....	6,573
Number of horses, all ages.....	3,173
Number of cattle, all ages, including milch cows.....	12,952
Number of sheep.....	3,806
Number of hogs.....	1,097
Personal property .....	\$683,606

CLAY COUNTY.

(Population, 1890, 11,517; County seat, Moorhead.)

AGRICULTURE.

	Acres, 1892.
Wheat.....	137,857
Oats.....	28,492
Corn.....	427
Barley.....	2,901
Rye.....	17
Buckwheat.....	49
Potatoes.....	1,120
Beans.....	13
Cultivated hay.....	1,488
Flax seed.....	206
Other products.....	73
Total acres cultivated.....	172,733

MISCELLANEOUS, 1892.

Wool, pounds, spring '92.....	16,966	Number of creameries, 1892.....	1
Land surface, acres, 1892.....	668,124.66	Number of farms, 1892.....	1,588
Water surface, acres, 1892.....	14,984.16		

FARM STOCK, 1892.

Number of milch cows.....	6,541
Number of horses, all ages.....	7,443
Number of cattle, all ages, including milch cows.....	12,943
Number of sheep.....	8,137
Number of hogs.....	2,100
Personal property.....	\$938,339

COTTONWOOD COUNTY.

(Population 1890, 7,412; County seat, Windom.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	45,899	Bushels..... 825,831	18.00	49,654
Oats.....	25,451	"..... 903,584	35.50	26,669
Corn.....	6,120	"..... 186,483	30.50	3,868
Barley.....	4,982	"..... 151,946	30.50	6,931
Rye.....	50	"..... 305	6.10	
Buckwheat.....	44	"..... 900	20.50	14
Potatoes.....	471	"..... 21,171		515
Beans.....	38	"..... 190		
Sugar cane.....	10	Syrup, gallons.....		
Cultivated hay.....	3,484	Tons..... 4,406		4,084
Flax seed.....	14,372	Bushels..... 125,762	8.80	8,013
Other products.....	56			25
Total acres cultivated.....	100,958			99,773

## MISCELLANEOUS, 1891.

Wild hay, tons, .....	24,855	Butter, pounds.....	200,725
Timothy seed, bushels .....	300	Cheese, pounds .....	100
Clover seed, bushels.....	2	Wool, pounds, fall '91.....	76,033
Apple trees, growing.....	862	Wool, pounds, spring '92.....	127,010
Apple trees, bearing.....	169	Land surface, acres, 1892.....	407,594.35
Apples, bushels.....	8	Water surface, acres, 1892.....	8,655.65
Bees, number of hives.....	70	Number of cheese factories, '92.....	1
Honey, pounds.....	1,400	Number of farms, 1892.....	1,365

## FARM STOCK, 1892.

Number of milch cows.....	5,564
Number of horses, all ages.....	5,697
Number of cattle, all ages, including milch cows.....	11,602
Number of sheep.....	24,563
Number of hogs.....	2,239
Personal property.....	\$667,262

## CROW WING COUNTY.

(Population, 1890, 8,852; County seat, Brainerd.)

## FARM STOCK, 1892.

Number of milch cows.....	1,601
Number of horses, all ages.....	
Number of cattle, all ages, including milch cows.....	3,036
Number of sheep.....	430
Number of hogs.....	481
Personal property.....	\$557,025

## DAKOTA COUNTY.

(Population, 1890, 20,240; County seat, Hastings.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.	
Wheat .....	1,287	Bushels .....	24,138	18.80	2,636
Oats.....	7,737	" .....	207,547	26.80	7,616
Corn .....	1,878	" .....	29,247	15.60	1,676
Barley .....	229	" .....	7,390	32.30	455
Rye .....	214	" .....	4,195	19.60	252
Buckwheat.....	112	" .....	1,691	15.10	88
Potatoes .....	257	" .....	33,783		307
Beans .....	13	" .....	160		3
Sugar cane .....	2	Syrup, gallons, .....	108		
Cultivated hay .....	2,925	Tons .....	3,862		2,348
Flax seed.....	751	Bushels .....	14,154	18.80	
Other products.....	10				97
Total acres cultivated .....	15,415				15,478
Acres increase in 1892 .....	63				

## MISCELLANEOUS, 1891.

Wild hay, tons .....	965	Wool, pounds, fall '91.....	1,555
Clover seed, bushels .....	10	Wool, pounds, spring '92.....	3,893
Bees, number of hives .....	32	Land surface, acres, 1892.....	387,753.96
Honey, pounds .....	108	Water surface, acres, 1892.....	3,488.61
Butter, pounds.....	59,488	Number of farms, 1892.....	224

## FARM STOCK, 1892.

Number of milch cows.....	10,124
Number of horses, all ages.....	8,522
Number of cattle, all ages, including milch cows.....	18,312
Number of sheep.....	9,905
Number of hogs.....	5,649
Personal property.....	\$,519,080

DODGE COUNTY.

(Population, 1890, 10,864; County seat, Mantorville.)  
AGRICULTURE.

Product.	Acres. 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	7,596	Bushels..... 118,828	15.60	10,092
Oats.....	22,390	"..... 580,498	25.90	15,708
Corn.....	9,390	"..... 201,874	21.50	6,325
Barley.....	14,593	"..... 278,922	19.10	13,603
Rye.....	908	"..... 18,025	19.90	2,260
Buckwheat.....	339	"..... 3,450	10.20	517
Potatoes.....	367	"..... 44,253	.....	311
Beans.....	13	"..... 42	.....	5
Sugar cane.....	4	Syrup, gal'ns..... 230	.....	.....
Cultivated hay.....	16,195	Tons..... 23,240	.....	18,658
Flax seed.....	14,751	Bushels..... 156,617	10.60	11,097
Other products.....	179	.....	.....	77
Total acres cultivated.....	86,725	.....	.....	78,653

MISCELLANEOUS, 1891.

Wild hay, tons.....	7,071	Butter, pounds.....	853,430
Timothy seed, bushels.....	27,096	Cheese, pounds.....	72,300
Clover seed.....	45	Wool, pounds, fall '91.....	11,515
Apple trees, growing.....	3,496	Wool, pounds, spring '92.....	15,367
Apple trees, bearing.....	1,649	Land surface, acres, 1892.....	279,956.47
Apples, bushels.....	970	Water surface, acres, 1892.....	782.42
Grape vines, bearing.....	92	Number of cheese factories, '92.....	2
Grapes, pounds.....	316	Number of creameries, 1892.....	3
Bees, number of hives.....	261	Number of farms, 1892.....	371
Honey, pounds.....	9,579		

FARM STOCK, 1892.

Number of milch cows.....	9,745
Number of horses, all ages.....	6,856
Number of cattle, all ages, including milch cows.....	18,202
Number of sheep.....	5,185
Number of hogs.....	4,036
Personal property.....	\$954,360

DOUGLAS COUNTY.

(Population, 1890, 14,606; County seat, Alexandria.)  
AGRICULTURE.

Product.	Acres 1891.	Yield, 1891.	Yield, per acre.	Acres, 1892.
Wheat.....	68,268	Bushels..... 1,490,327	21.80	74,561
Oats.....	13,693	"..... 530,564	38.70	14,692
Corn.....	2,746	"..... 87,018	31.60	2,404
Barley.....	770	"..... 27,611	35.90	1,330
Rye.....	64	"..... 1,596	24.90	97
Buckwheat.....	5	"..... 50	10.00	58
Potatoes.....	869	"..... 108,448	.....	911
Beans.....	6	"..... 63	.....	5
Sugar cane.....	2	Syrup, gal's..... 121	.....	1
Cultivated hay.....	2,085	Tons..... 3,078	.....	2,305
Flax seed.....	131	Bushels..... 1,139	8.70	6
Other products.....	118	.....	.....	212
Total acres cultivated.....	88,757	.....	.....	96,582
Acres increase in 1892.....	7,825	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	41,630	Maple syrup, gallons.....	216
Timothy seed, bushels.....	170	Butter, pounds.....	416,704
Clover seed, bushels.....	68	Cheese, pounds.....	3,528
Apple trees, growing.....	2,826	Wool, pounds, fall '91.....	10,019
Apple trees, bearing.....	590	Wool, pounds, spring '92.....	22,218
Apples, bushels.....	314	Land surface, acres, 1892.....	401,014.74
Grape vines, bearing.....	.....	Water surface, acres, 1892.....	61,485.83
Grape, pounds.....	.....	Number of cheese factories, 1892.....	.....
Tobacco, pounds.....	.....	Number of creameries, 1892.....	.....
Bees, number of hives.....	40	Number of farms, 1892.....	1,882
Honey, pounds.....	600		



## FARM STOCK, 1892.

Number of milch cows.....	7,140
Number of horses, all ages.....	6,893
Number of cattle, all ages, including milch cows.....	13,992
Number of sheep.....	5,020
Number of hogs.....	2,623
Personal property.....	\$1,090,508

## FARIBAULT COUNTY.

(Population 1890, 16,708; County seat, Blue Earth City.)

## FARM STOCK, 1892.

Number of milch cows.....	12,138
Number of horses, all ages.....	10,838
Number of cattle, all ages, including milch cows.....	24,011
Number of sheep.....	5,618
Number of hogs.....	8,559
Personal property.....	\$1,349,768

## FILLMORE COUNTY.

(Population 1890, 25,966; County seat, Preston.)

## AGRICULTURE.

Product.	Acres. 1891.	Yield, 1891.	Yield per acre.	Acres. 1892.
Wheat.....	13,723	Bushels..... 189,040	13.80	15,398
Oats.....	58,729	"..... 1,985,234	33.80	63,879
Corn.....	42,866	"..... 1,365,027	31.70	41,315
Barley.....	31,419	"..... 716,731	22.80	31,267
Rye.....	1,692	"..... 27,901	16.50	2,343
Buckwheat.....	1,185	"..... 12,372	10.50	534
Potatoes.....	1,628	"..... 140,934		1,487
Beans.....	41	"..... 706		100
Sugar cane.....	59	Syrup, gal.. 5,382		26
Cultivated hay.....	37,841	Tons..... 49,686		45,130
Flax seed.....	29,188	Bushels... 346,982	11.90	24,726
Other products.....	14,897			10,841
Total acres cultivated.....	233,268			237,046
Acres increase in 1892.....	3,778			

## MISCELLANEOUS. 1891.

Wild hay, tons.....	5,253	Maple syrup, gallons, 1892.....	82
Timothy seed, bushels.....	55,133	Butter, pounds.....	1,271,866
Clover seed, bushels.....	3,162	Cheese, pounds.....	23,000
Apple trees, growing.....	29,710	Wool, pounds, fall 1891.....	9,206
Apple trees, bearing.....	17,597	Wool, pounds, spring 1892.....	34,543
Apples, bushels.....	9,818	Land surface, acres, 1892.....	553,101.90
Grape vines, bearing.....	1,248	Water surface, acres, 1892.....	1,912.54
Grapes, pounds.....	4,644	No. of cheese factories, 1892.....	
Tobacco, pounds.....	27,650	Number of creameries, 1892.....	
Bees, number of hives.....	964	Number of farms, 1892.....	
Honey, pounds.....	14,168		

## FARM STOCK, 1892.

Number of milch cows.....	17,692
Number of horses, all ages.....	14,301
Number of cattle, all ages, including milch cows.....	32,945
Number of sheep.....	7,396
Number of hogs.....	15,481
Personal property.....	\$2,195,367

FREEBORN COUNTY.

(Population, 1890, 17,962; County seat, Albert Lea.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	34,414	Bushels..... 612,069	17.80	43,476
Oats.....	27,326	"..... 1,005,364	36.80	36,776
Corn.....	31,107	"..... 572,637	27.10	21,100
Barley.....	6,129	"..... 203,208	33.20	13,646
Rye.....	146	"..... 3,033	20.80	411
Buckwheat.....	59	"..... 887	15.10	89
Potatoes.....	2,144	"..... 167,633	.....	2,154
Beans.....	6	"..... 155	.....	19
Sugar cane.....	11	Syrup, gal'ns..... 752	.....	13
Cultivated hay.....	6,708	Tons..... 10,005	.....	9,407
Flax seed.....	7,076	Bushels..... 68,033	9.60	3,713
Other products.....	326	.....	.....	268
Total acres cultivated.....	105,452	.....	.....	131,072
Acres increase in 1892.....	25,620	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	47,861	Honey, pounds.....	5,999
Timothy seed, bushels.....	3,675	Butter, pounds.....	913,080
Clover seed, bushels.....	701	Cheese, pounds.....	19,000
Apple trees, growing.....	12,370	Wool, pounds, fall '91.....	6,377
Apple trees, bearing.....	5,853	Wool, pounds, spring '92.....	13,752
Apples, bushels.....	3,373	Land surface, acres, 1892.....	449,212.53
Grape vines, bearing.....	330	Water surface, acres, 1892.....	13,271.87
Grapes, pounds.....	2,546	Number of creameries, 1892.....	15
Bees, number of hives.....	773	Number of farms, 1892.....	1,744

FARM STOCK, 1892.

Number of milch cows.....	17,923
Number of horses, all ages.....	10,195
Number of cattle, all ages, including milch cows.....	33,601
Number of sheep.....	4,342
Number of hogs.....	9,156
Personal property.....	\$1,227,142

GOODHUE COUNTY.

(Population, 1890, 28,806; County seat, Red Wing.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	53,529	Bushels..... 894,124	16.70	58,303
Oats.....	44,789	"..... 1,584,374	35.40	41,629
Corn.....	22,423	"..... 611,720	27.30	20,497
Barley.....	43,632	"..... 1,463,611	33.50	56,472
Rye.....	6,359	"..... 113,455	17.80	13,492
Buckwheat.....	292	"..... 3,613	12.40	343
Potatoes.....	1,311	"..... 138,155	.....	1,328
Beans.....	301	"..... 3,662	.....	191
Sugar cane.....	127	Syrup, gal'ns, 12,966	.....	258
Cultivated hay.....	43,787	Tons..... 46,881	.....	35,973
Flax seed.....	15,123	Bushels..... 148,390	9.80	8,094
Other products.....	1,632	.....	.....	1,482
Total acres cultivated.....	233,305	.....	.....	238,062
Acres increase in 1892.....	4,757	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay.....	17,735	Buter, pounds.....	991,755
Timothy seed, bushels.....	5,277	Cheese, pounds.....	114,735
Clover seed, bushels.....	612	Wool, pounds, fall '91.....	39,901
Apple trees, growing.....	23,015	Wool, pounds, spring, '92.....	50,796
Apple trees, bearing.....	9,187	Land surface, acres, 1892.....	489,329.56
Apples, bushels.....	4,667	Water surface, acres, 1892.....	12,936.06
Grape vines, bearing.....	1,659	Number of cheese factories, 1892.....	4
Grapes, pounds.....	6,835	Number of creameries, 1892.....	8
Bees, number of hives.....	778	Number of farms, 1892.....	2,199
Honey, pounds.....	12,804	.....	.....

## FARM STOCK, 1892.

Number of milch cows.....	18,192
Number of horses, all ages.....	12,016
Number of cattle, all ages, including milch cows.....	29,481
Number of sheep.....	8,848
Number of hogs.....	8,460
Personal property.....	\$2,615,989

## GRANT COUNTY.

(Population, 1890, 6,875; County seat, Elbow Lake.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	49,279	Bushels..... 551,517	11.20	57,817
Oats.....	6,604	"..... 206,952	31.30	8,191
Corn.....	283	"..... 4,228	14.90	142
Barley.....	505	"..... 16,580	32.80	365
Rye.....		".....		2
Potatoes.....		"..... 39,933		243
Beans.....	449			
Cultivated hay.....	522	Tons..... 357		159
Flax seed.....	22	Bushels..... 252	10.10	
Other products.....				3
Total acres cultivated.....	57,664			66,922
Acres increase in 1892.....	9,258			

## MISCELLANEOUS, 1891.

Wild hay, tons.....	5,766	Cheese, pounds.....	770
Timothy seed, bushels.....	40	Wool, pounds, fall '91.....	2,344
Apple trees, growing.....	390	Wool, pounds, spring '92.....	68
Apple trees, bearing.....	195	Land surface, acres, 1892.....	384,256.21
Apples, bushels.....	106	Water surface 1892.....	11,843.03
Butter, pounds.....	153,993		

## FARM STOCK, 1892.

Number of milch cows.....	4,282
Number of horses, all ages.....	5,175
Number of cattle, all ages, including milch cows.....	8,539
Number of sheep.....	3,195
Number of hogs.....	1,464
Personal property.....	\$592,744

## HENNEPIN COUNTY.

(Population 1890, 185,294; County seat, Minneapolis.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	20,814	Bushels..... 443,858	21.30	25,360
Oats.....	21,188	"..... 838,336	39.60	22,706
Corn.....	15,837	"..... 459,132	29.00	14,912
Barley.....	305	"..... 10,148	33.30	504
Rye.....	833	"..... 15,047	18.10	1,213
Buckwheat.....	53	"..... 767	14.50	44
Potatoes.....	6,413	"..... 752,867		6,517
Beans.....	137	"..... 1,319		124
Sugar cane.....	70	Syrup, gal..... 6,449		47
Cultivated hay.....	12,198	Tons..... 11,782		10,462
Flax seed.....	10	Bushels..... 80	8.00	26
Other products.....	2,285			2,488
Total acres cultivated.....	80,143			84,403
Acres increase in 1892.....	4,260			



MISCELLANEOUS, 1891.

Wild hay, tons.....	29,484	Maple syrup, gallons, 1892....	1,079
Timothy seed, bushels.....	9	Butter, pounds.....	604,728
Clover seed, bushels.....	676	Cheese, pounds.....	18,710
Apple trees, growing.....	11,383	Wool, pounds, fall 1891.....	3,901
Apple trees, bearing.....	4,892	Wool, pounds, spring 1892.....	20,762
Apples, bushels.....	3,833	Land surface, acres, 1892.....	352,918.77
Grape vines, bearing.....	6,403	Water surface, acres, 1892.....	44,821.20
Grapes, pounds.....	35,835	No. of cheese factories, 1892.....	.....
Tobacco, pounds.....	315	Number of creameries, 1892.....	.....
Bees, number of hives.....	1,074	Number of farms, 1892.....	1,639
Honey, pounds.....	17,525		

FARM STOCK, 1892.

Number of milch cows.....	13,242
Number of horses, all ages.....	17,158
Number of cattle, all ages, including milch cows.....	17,558
Number of sheep.....	4,073
Number of hogs.....	5,445
Personal property.....	\$21,262,745

HOUSTON COUNTY.

(Population, 1890, 14,653; County seat, Caledonia.)

AGRICULTURE.

Products.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	12,102	Bushels..... 181,562	15.00	13,571
Oats.....	32,342	" " " 854,006	26.40	35,465
Corn.....	27,066	" " " 793,682	29.30	25,834
Barley.....	3,251	" " " 76,608	23.60	4,487
Rye.....	1,437	" " " 18,214	12.70	1,278
Buckwheat.....	300	" " " 4,440	14.50	380
Potatoes.....	1,367	" " " 138,604	.....	1,449
Beans.....	78	" " " 961	.....	92
Sugar cane.....	56	Syrup, g'll'ns 2,810	.....	60
Cultivated hay.....	20,085	Tons 25,069	13.20	20,446
Flax seed.....	2,128	Bushels..... 28,170	.....	1,502
Other products.....	1,761	.....	.....	1,601
Total acres cultivated.....	101,973	.....	.....	106,165
Acres increase in 1892.....	4,192	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	4,516	Maple syrup, gallons, 1892. ....	1,037
Timothy seed, bushels.....	1,457	Butter, pounds.....	628,650
Clover seed, bushels.....	519	Cheese, pounds.....	4,340
Apple trees, growing.....	13,301	Wool, pounds, fall '91.....	8,385
Apple trees, bearing.....	7,715	Wool, pounds, spring '92.....	22,201
Apples, bushels.....	10,334	Land surface, acres, 1892.....	363,998.07
Grape vines, bearing.....	14,976	Water surface, acres, 1892.....	7,104.17
Grapes, pounds.....	132,531	Number of cheese factories, 1892.....	.....
Tobacco, pounds.....	500	Number of creameries, 1892.....	2
Bees, number of hives.....	515	Number of farms, 1892.....	1,342
Honey, pounds.....	7,870		

FARM STOCK, 1892.

Number of milch cows.....	11,030
Number of horses, all ages.....	7,214
Number of cattle, all ages, including milch cows.....	22,267
Number of sheep.....	3,953
Number of hogs.....	13,435
Personal property.....	\$1,152,229

## HUBBARD COUNTY.

(Population, 1890, 1,412; County seat, Park Rapids.)

## AGRICULTURE.

PRODUCT.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	10,000	Bushels..... 225,000	22.50	11,000
Oats.....	1,800	"..... 45,000	25.00	1,600
Corn.....	300	"..... 9,000	30.00	200
Barley.....	160	"..... 5,000	31.30	199
Rye.....	149	"..... 4,001	26.90	87
Buckwheat.....	1	"..... 21	21 00	2
Potatoes.....	100	"..... 10,000	.....	100
Beans.....	2	"..... 6	.....	8
Cultivated hay.....	100	Tons..... 120	.....	200
Other products.....	25	.....	.....	13
Total acres cultivated.....	12,637	.....	.....	13,409
Acres increase in 1892.....	772	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	75	Wool, pounds, fall '91.....	70
Timothy seed, bushels.....	3	Wool, pounds, spring '92.....	352
Apple trees, growing.....	400	Land surface, acres, 1892.....	334,622.87
Apple trees, bearing.....	5	Water surface, acres, 1892.....	40,045.25
Butter, pounds.....	13,562	Number of farms, 1892.....	200

## FARM STOCK, 1892.

Number of milch cows.....	552
Number of horses, all ages.....	923
Number of cattle, all ages, including milch cows.....	1,277
Number of sheep.....	365
Number of hogs.....	415
Personal property.....	\$157,553

## ISANTI COUNTY.

(Population, 1890, 7,607; County seat, Cambridge.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	5,194	Bushels..... 73,872	14 20	6,645
Oats.....	7,496	"..... 209,738	28.00	8,498
Corn.....	4,527	"..... 102,834	22.70	4,295
Barley.....	36	"..... 655	18.20	115
Rye.....	2,051	"..... 24,591	12.00	2,431
Buckwheat.....	98	"..... 1,574	16.10	290
Potatoes.....	4,972	"..... 611,973	.....	4,789
Beans.....	393	"..... 2,997	.....	486
Sugar cane.....	43	Syrup, gal's.. 1,203	.....	251
Cultivated hay.....	2,460	Tons..... 2,460	.....	1,851
Other products.....	69	.....	.....	138
Total acres cultivated.....	27,337	.....	.....	29,789
Acres increase in 1892.....	2,450	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	14,378	Honey, pounds.....	840
Timothy seed, bushels.....	68	Maple syrup, gallons, 1892.....	30
Clover seed, bushels.....	5	Butter, pounds.....	238,917
Apple trees, growing.....	1,241	Cheese, pounds.....	1,315
Apple trees, bearing.....	710	Wool, pounds, fall '91.....	10,215
Apples, bushels.....	269	Wool, pounds, spring '92.....	16,788
Grape vines, bearing.....	3	Land surface, acres, 1892.....	266,629.79
Grapes, pounds.....	11	Water surface, acres, 1892.....	26,395.86
Tobacco, pounds.....	20	Number of farms, 1892.....	1,271
Bees, number of hives.....	55	.....	.....

## FARM STOCK, 1892.

Number of milch cows.....	4,605
Number of horses, all ages.....	2,510
Number of cattle, all ages, including milch cows.....	9,153
Number of sheep.....	4,290
Number of hogs.....	1,342
Personal property.....	\$343,113

ITASCA COUNTY.

(Population 1890, 743.)

FARM STOCK, 1892.

Number of milch cows.....	45
Number of horses, all ages.....	267
Number of cattle, all ages, including milch cows.....	621
Number of hogs.....	38
Personal property.....	\$101,800

JACKSON COUNTY.

(Population 1890, 8,924; County seat, Jackson.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	5,624	Bushels..... 92,094	16.40	6,587
Oats.....	3,722	"..... 113,332	30.40	3,599
Corn.....	1,915	"..... 41,113	21.50	1,588
Barley.....	1,514	"..... 35,013	23.10	2,025
Rye.....	16	"..... 118	7.40	30
Buckwheat.....	11	"..... 146	13.30	39
Potatoes.....	107	"..... 6,229		105
Sugarcane.....	2	Syrup, gal..... 74		101
Cultivated hay.....	155	Tons..... 237		506
Flax seed.....	2,549	Bushels..... 26,350	10.30	1,805
Other products.....				14
Total acres cultivated.....	15,615			16,399
Acres increase in 1892.....	784			

MISCELLANEOUS, 1891.

Wild hay, tons.....	3,275	Honey, pounds.....	200
Timothy seed, bushels.....	106	Butter, pounds.....	31,850
Apple trees, growing.....	677	Wool, pounds, fall 1891.....	1,240
Apple trees, bearing.....	119	Wool, pounds, spring 1892.....	4,636
Apples, bushels.....	64	Land surface, acres, 1892.....	446,066.45
Grape vines, bearing.....	6	Water surface, acres, 1892.....	16,434.75
Bees, number of hives.....	10	Number of farms, 1892.....	26

FARM STOCK, 1892.

Number of milch cows.....	7,748
Number of horses, all ages.....	6,754
Number of cattle, all ages, including milch cows.....	16,869
Number of sheep.....	11,114
Number of hogs.....	3,258
Personal property.....	\$647,655

KANABEC COUNTY.

(Population, 1,579; County seat, Mora.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	350	Bushels..... 5,192	14.80	460
Oats.....	264	"..... 8,226	31.20	526
Corn.....	50	"..... 1,437	29.10	42
Barley.....	19	"..... 504	26.50	22
Rye.....	256	"..... 5,116	20.00	190
Buckwheat.....	1	"..... 5	5.00	6
Potatoes.....	141	"..... 14,010		170
Beans.....	10	"..... 131		11
Cultivated hay.....	497	Tons..... 633		274
Other products.....	28			25
Total acres cultivated.....	1,616			1,726
Acres increase in 1892.....	110			



## MISCELLANEOUS, 1891.

Wild hay, tons .....	1,326	Cheese, pounds.....	306
Apple trees, growing.....	63	Wool, pounds, fall '91.....	986
Apple trees, bearing.....	16	Wool, pounds, spring '92.....	988
Apples, bushels.....	9	Land surface, acres, 1892.....	337,535.89
Tobacco, pounds.....	20	Water surface, acres, 1892.....	9,336.41
Butter, pounds.....	35,870	Number of farms, 1892.....	188

## FARM STOCK, 1892.

Number of milch cows.....	602
Number of horses, all ages.....	303
Number of cattle, all ages, including milch cows.....	1,403
Number of sheep.....	499
Number of hogs.....	214
Personal property.....	\$61,080

## KANDIYOHI COUNTY.

(Population 1890, 13,997; County seat, Willmar.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat .....	74,070	Bushels..... 1,217,296	16.40	78,551
Oats.....	15,506	"..... 451,918	29.10	15,793
Corn.....	4,040	"..... 98,766	24.40	3,601
Barley.....	1,436	"..... 37,618	26.20	2,307
Rye.....	18	"..... 277	15.40	56
Buckwheat.....	4	"..... 40	10.00	.....
Potatoes.....	432	"..... 33,510	.....	540
Beans.....	.....	.....	.....	1
Sugar cane.....	3	Syrup, gal..... 200	.....	1
Cultivated hay.....	1,302	Tons..... 1,897	.....	1,030
Flax seed.....	2,855	Bushels..... 25,442	8.90	1,212
Other products.....	104	.....	.....	126
Total acres cultivated.....	99,770	.....	.....	103,218
Acres increase in 1892.....	3,448	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	68,856	Butter, pounds.....	325,097
Timothy seed, bushels.....	116	Cheese, pounds.....	100
Apple trees, growing.....	2,531	Wool, pounds, fall 1891.....	4,339
Apple trees, bearing.....	855	Wool, pounds, spring 1892.....	26,567
Apples, bushels.....	513	Land surface, acres, 1892.....	497,101.35
Grape vines, bearing.....	50	Water surface, acres, 1892.....	57,867.69
Grapes, pounds.....	277	No. of cheese factories, 1892.....	2
Bees, number of hives.....	184	Number of creameries, 1892.....	4
Honey, pounds.....	4,074	Number of farms, 1892.....	1,707

## FARM STOCK, 1892.

Number of milch cows.....	10,230
Number of horses, all ages.....	8,708
Number of cattle, all ages, including milch cows.....	22,152
Number of sheep.....	6,257
Number of hogs.....	1,836
Personal property.....	\$1,168,391

## KITTSOON COUNTY.

(Population 1890, 5,387; County seat, Hallock.)

## FARM STOCK, 1892.

Number of milch cows.....	3,262
Number of horses, all ages.....	4,381
Number of cattle, all ages, including milch cows.....	7,458
Number of sheep.....	1,932
Number of hogs.....	1,008
Personal property.....	\$468,147

LAC QUI PARLE COUNTY.

(Population, 1890, 10,382; County seat, Madison.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres 1892.
Wheat.....	125,000	Bushels ..... 2,500,000	20.00	140,000
Oats.....	25,000	" ..... 800,000	32.00	27,000
Corn.....	11,000	" ..... 22,000	2.00	10,000
Barley.....	1,500	" ..... 45,000	30.00	3,000
Potatoes.....	1,000	" ..... 50,000	.....	1,100
Beans.....	20	" ..... 500	.....	20
Cultivated hay.....	2,000	Tons ..... 4,000	.....	2,500
Flax seed.....	3,000	Bushels ..... 30,000	10.00	1,500
Other products.....	100	.....	.....	100
Total acres cultivated.....	168,620	.....	.....	183,220
Acres increase in 1892.....	16,600	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	55,000	Cheese, pounds.....	2,000
Timothy seed, bushels.....	300	Wool, pounds, fall 1891.....	12,000
Apple trees, growing.....	2,500	Wool, pounds, spring 1892.....	15,000
Apple trees, bearing.....	250	Land surface, acres, 1892.....	492,609.93
Apples, bushels.....	75	Water surface, acres, 1892.....	1,237.57
Grape vines, bearing.....	250	Number of cheese factories, '92.....	1
Grapes, pounds.....	250	Number of creameries, 1892.....	3
Bees, number of hives.....	35	Number of farms, 1892.....	1,700
Honey, pounds.....	1,000		

FARM STOCK, 1892.

Number of milch cows.....	6,442
Number of horses, all ages.....	1,862
Number of cattle, all ages, including milch cows.....	13,074
Number of sheep.....	3,540
Number of hogs.....	2,727
Personal property.....	\$1,047,501

LAKE COUNTY.

(Population, 1890, 1,290; County seat, Two Harbors.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	1	Bushels ..... 30	30.00	.....
Oats.....	3	" ..... 130	43.30	3
Corn.....	3	" ..... 106	35.30	.....
Barley.....	.....	.....	.....	4
Rye.....	.....	.....	.....	1
Potatoes.....	7	" ..... 735	.....	6
Cultivated hay.....	91	Tons ..... 138	.....	94
Other products.....	3	.....	.....	4
Total acres cultivated.....	110	.....	.....	112
Acres increase in 1892.....	2	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	6	Land surface, acres, 1892.....	1,328,904.43
Butter, pounds.....	900	Water surface, acres, 1892.....	206,420.00
Wool, pounds, spring 1892.....	95		

FARM STOCK, 1892.

Number of milch cows.....	89
Number of horses, all ages.....	19
Number of cattle, all ages, including milch cows.....	106
Number of sheep.....	41
Number of hogs.....	13
Personal property.....	\$39,496

## LE SUEUR COUNTY.

(Population, 1890, 19,057; County seat, Le Sueur Center.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat .....	10,877	Bushels ..... 223,918	20.60	10,826
Oats .....	1,732	" ..... 65,093	37.60	1,685
Corn .....	2,959	" ..... 104,084	35.20	2,792
Barley .....	73	" ..... 2,766	37.90	69
Rye .....	8	" ..... 185	23.10	8
Potatoes .....	242	" ..... 27,136		237
Beans .....	10	" ..... 85		5
Sugar cane .....	8	Syrup, gal's.. 667		5
Cultivated hay .....	59	Tons ..... 138		31
Other products .....	100			101
Total acres cultivated .....	16,068			15,759

## MISCELLANEOUS, 1891.

Wild hay, tons .....	4,391	Honey, pounds .....	550
Clover seed, bushels .....	12	Butter, pounds .....	50,040
Apple trees, growing .....	313	Wool, pounds, fall '91 .....	975
Apple trees, bearing .....	229	Wool, pounds, spring '92 .....	1,112
Apples, bushels .....	113	Land surface, acres, 1892 .....	284,496.41
Grape vines, bearing .....	208	Water surface, acres, 1892 .....	17,981.77
Grapes, pounds .....	1,291	Number of creameries, 1892 .....	1
Tobacco, pounds .....	4,860	Number of farms, 1892 .....	494
Bees, number of hives .....	61		

## FARM STOCK, 1892.

Number of milch cows .....	7,044
Number of horses, all ages .....	1,404
Number of cattle, all ages, including milch cows .....	11,839
Number of sheep .....	2,921
Number of hogs .....	8,431
Personal property .....	\$914,103

## LINCOLN COUNTY.

(Population, 1890, 5,691; County seat, Lake Benton.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat .....	32,856	Bushels ..... 515,750	15.70	45,218
Oats .....	10,591	" ..... 308,814	29.20	12,157
Corn .....	3,367	" ..... 45,967	13.30	3,943
Barley .....	1,520	" ..... 40,961	27.00	3,332
Rye .....	209	" ..... 1,706	8.20	192
Potatoes .....	424	" ..... 24,824		427
Beans .....	1	" ..... 12		1
Cultivated hay .....	717	Tons ..... 696		777
Flax seed .....	14,793	Bushels ..... 107,875	7.30	5,606
Other products .....	10			203
Total acres cultivated .....	64,488			71,856
Acres increase in 1892 .....	7,368			

## MISCELLANEOUS, 1891.

Wild hay, tons .....	17,032	Butter, pounds .....	237,676
Timothy seed, bushels .....	268	Cheese, pounds .....	152
Apple trees, growing .....	1,485	Wool, pounds, fall '91 .....	9,123
Apple trees, bearing .....	239	Wool, pounds, spring '92 .....	29,114
Apples, bushels .....	77	Land surface, acres, 1892 .....	334,355.00
Grape vines, bearing .....	10	Water surface, acres, 1892 .....	12,517.30
Grapes, pounds .....	10	Number of cheese factories, '92 .....	1
Tobacco, pounds .....	25	Number of creameries, 1892 .....	1
Bees, number of hives .....	1	Number of farms, 1892 .....	679
Honey, pounds .....	30		



FARM STOCK, 1892.

Number of milch cows.....	3,461
Number of horses, all ages.....	3,921
Number of cattle, all ages, including milch cows.....	7,566
Number of sheep.....	8,114
Number of hogs.....	1,114
Personal property.....	\$421,490

LYON COUNTY.

(Population 1890, 9,501; County seat, Marshall.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891	Yield per acre.	Acres, 1892.
Wheat.....	21,319	Bushels..... 414,505	19.40	25,887
Oats.....	6,655	"..... 237,326	35.40	6,826
Corn.....	4,272	"..... 93,430	21.90	3,680
Barley.....	806	"..... 24,443	30.30	1,554
Rye.....	1	"..... 20	20.00	.....
Potatoes.....	149	"..... 12,668	.....	170
Beans.....	4	"..... 22	.....	46
Cultivated hay.....	460	Tons..... 701	.....	441
Flax seed.....	4,489	Bushels..... 49,805	11.10	2,139
Other products.....	58	.....	.....	35
Total acres cultivated.....	38,213	.....	.....	40,778
Acres increase in 1892.....	2,565	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	8,668	Honey, pounds.....	1,100
Timothy seed, bushels.....	370	Butter, pounds.....	123,495
Clover seed, bushels.....	2	Cheese, pounds.....	120
Apple trees, growing.....	2,612	Wool, pounds, fall 1891.....	2,425
Apple trees, bearing.....	706	Wool, pounds, spring 1892.....	7,279
Apples, bushels.....	81	Land surface, acres, 1892.....	454,072.72
Grape vines, bearing.....	414	Water surface, acres, 1892.....	7,150.08
Grapes, pounds.....	3	Number of farms, 1892.....	407
Bees, number of hives.....	52	.....	.....

FARM STOCK, 1892.

Number of milch cows.....	5,231
Number of horses, all ages.....	6,598
Number of cattle, all ages, including milch cows.....	10,065
Number of sheep.....	9,874
Number of hogs.....	2,132
Personal property.....	\$882,722

MCLEOD COUNTY.

(Population, 1890, 17,026; County seat, Glencoe.)

AGRICULTURE.

Products.	Acres, 1891.	Yield, 1891.	Yield, per acre.	Acres, 1892.
Wheat.....	50,354	Bushels..... 1,101,211	21.90	54,341
Oats.....	10,528	"..... 476,448	45.40	10,777
Corn.....	7,069	"..... 259,215	36.70	7,210
Barley.....	599	"..... 19,852	33.10	765
Rye.....	132	"..... 3,273	24.80	165
Buckwheat.....	11	"..... 254	23.10	1
Potatoes.....	723	"..... 74,308	.....	734
Beans.....	17	"..... 404	.....	3
Sugar cane.....	47	Syrup, gallons..... 4,833	.....	33
Cultivated hay.....	1,236	Tons..... 1,609	.....	1,318
Flax seed.....	1,030	Bushels..... 10,368	10.10	278
Other products.....	186	.....	.....	246
Total acres cultivated.....	71,932	.....	.....	75,871
Acres increase in 1892.....	3,939	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	28,810	Maple syrup, gallons, 1892.....	12
Timothy seed, bushels.....	123	Butter, pounds.....	292,661
Clover seed, bushels.....	127	Cheese, pounds.....	5,521
Apple trees, growing.....	2,287	Wool, pounds, fall 1891.....	8,068
Apple trees, bearing.....	823	Wool, pounds, spring 1892.....	14,499
Apples, bushels.....	527	Land surface, acres, 1892.....	310,488.63
Grape vines, bearing.....	254	Water surface, acres, 1892.....	14,283.23
Grapes, pounds.....	241	Number of cheese factories, '92.....	2
Tobacco, pounds.....	480	Number of creameries, 1892.....	4
Bees, number of hives.....	113	Number of farms, 1892.....	698
Honey, pounds.....	909		

## FARM STOCK, 1892.

Number of milch cows.....	10,878
Number of horses, all ages.....	8,165
Number of cattle, all ages, including milch cows.....	17,573
Number of sheep.....	4,566
Number of hogs.....	5,201
Personal property.....	\$1,231,003

## MARSHALL COUNTY.

(Population, 1890, 9,130; County seat, Warren.)

## AGRICULTURE.

Product.	Acres. 1891.	Yield, 1891.	Yield per acre.	Acres. 1892.
Wheat.....	87,113	Bushels..... 1,736,086	19.90	71,967
Oats.....	11,061	"..... 369,490	33.40	9,769
Corn.....	91	"..... 1,070	11.80	126
Barley.....	7,670	"..... 235,086	30.70	9,359
Rye.....	258	"..... 4,854	18.80	335
Buckwheat.....	6	"..... 90	15.00	11
Potatoes.....	647	"..... 65,579		376
Beans.....	8	"..... 240		9
Cultivated hay.....	1,480	Tons..... 2,670		1,278
Flax seed.....	168	Bushels..... 1,700	10.10	200
Other products.....	26			59
Total acres cultivated.....	108,528			93,489

## MISCELLANEOUS, 1891.

Wild hay, tons.....	17,397	Wool, pounds, fall 1891.....	5,810
Timothy seed, bushels.....	2,881	Wool, pounds, spring, 1892.....	8,947
Apple trees, growing.....	53	Land surface, acres, 1892.....	1,071,129.11
Tobacco, pounds.....	30	Water surface, acres, 1892.....	895.01
Butter, pounds.....	164,785	Number of farms, 1892.....	1,469
Cheese, pounds.....	1,058		

## FARM STOCK, 1892.

Number of milch cows.....	4,085
Number of horses, all ages.....	5,221
Number of cattle, all ages, including milch cows.....	10,715
Number of sheep.....	2,957
Number of hogs.....	1,802
Personal property.....	\$609,509

## MARTIN COUNTY.

(Population, 1890, 9,403; County seat, Fairmont.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat .....	24,569	Bushels ..... 378,894	15.40	35,266
Oats .....	29,908	" ..... 1,108,683	37.10	33,731
Corn .....	20,133	" ..... 609,716	30.30	18,215
Barley .....	5,476	" ..... 126,614	21.30	5,836
Rye .....	109	" ..... 1,963	18.00	174
Buckwheat .....	238	" ..... 1,429	6.00	78
Potatoes .....	655	" ..... 56,939	.....	774
Beans .....	19	" ..... 187	.....	20
Sugar cane .....	48	Syrup, gallons 3,179	.....	37
Cultivated hay .....	1,087	Tons ..... 1,859	.....	1,690
Flax seed .....	21,652	Bushels ..... 217,885	10.10	14,787
Other products .....	194	.....	.....	205
Total acres cultivated .....	104,088	.....	.....	110,813
Acres increase in 1892 .....	6,725	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons .....	63,556	Honey, pounds .....	6,168
Timothy seed, bushels .....	1,949	Butter, pounds .....	560,602
Clover seed, bushels .....	7	Cheese, pounds .....	3,425
Apple trees, growing .....	18,433	Wool, pounds, fall 1891 .....	28,751
Apple trees, bearing .....	4,005	Wool, pounds, spring 1892 .....	23,450
Apples, bushels .....	1,580	Land surface, acres, 1892 .....	451,021.05
Grape vines, bearing .....	351	Water surface, acres, 1892 .....	12,667.35
Grapes, pounds .....	387	Number of creameries, 1892 .....	1
Tobacco, pounds .....	500	Number of farms, 1892 .....	738
Bees, number of hives .....	435		

## FARM STOCK, 1892.

Number of milch cows .....	8,058
Number of horses, all ages .....	8,290
Number of cattle, all ages, including milch cows .....	16,143
Number of sheep .....	7,126
Number of hogs .....	6,889
Personal property .....	\$797,113

## MEEKER COUNTY.

(Population, 1890, 15,436; County seat, Litchfield.)

## AGRICULTURE.

Product.	Acres, 1892.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat .....	71,406	Bushels .... 1,071,090	15.00	71,406
Oats .....	22,560	" ..... 1,128,000	50.00	22,560
Corn .....	6,660	" ..... 264,400	39.70	6,660
Potatoes .....	2,525	" ..... 227,250	.....	2,525
Total acres cultivated .....	103,151	.....	.....	103,151

## MISCELLANEOUS, 1891.

Land surface, acres, 1892 .....	381,443.02	Water surface, acres, 1892 .....	24,075.56
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## FARM STOCK, 1892.

Number of milch cows .....	8,344
Number of horses, all ages .....	7,802
Number of cattle, all ages, including milch cows .....	15,230
Number of sheep .....	3,327
Number of hogs .....	2,271
Personal property .....	\$891,088



## MILLE LACS COUNTY.

(Population, 1890, 2,845; County seat, Princeton.)

## AGRICULTURE.

	Acres, 1892.
Wheat.....	1,105
Oats.....	1,640
Corn.....	1,149
Barley.....	225
Rye.....	760
Buckwheat.....	130
Potatoes.....	586
Beans.....	89
Sugar cane.....	10
Cultivated hay.....	255
Other products.....	451
Total acres cultivated.....	6,400

## MISCELLANEOUS, 1891.

Maple syrup, gallons, 1892.....	1,614
Wool, pounds, spring '92.....	1,736
Land surface, acres, 1892.....	365,497.65
Water surface, acres, 1892.....	74,945.53
Number of creameries, 1892.....	1
Number of farms, 1892.....	483

## FARM STOCK, 1892.

Number of milch cows.....	977
Number of horses, all ages.....	769
Number of cattle, all ages, including milch cows.....	2,151
Number of sheep.....	502
Number of hogs.....	476
Personal property.....	\$195,159

## MORRISON COUNTY.

(Population 1890, 13,325; County seat, Little Falls.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	24,320	Bushels..... 396,737	16.30	27,046
Oats.....	8,085	"..... 235,195	29.10	8,704
Corn.....	4,208	"..... 118,309	28.10	4,109
Barley.....	128	"..... 2,889	22.60	311
Rye.....	1,356	"..... 19,071	14.10	2,315
Buckwheat.....	196	"..... 481	2.50	38
Potatoes.....	788	"..... 96,744		739
Beans.....	153	"..... 1,231		45
Sugar cane.....	2	Syrup, gal.... 162		155
Cultivated hay.....	712	Tons..... 924		1,144
Flax seed.....	32	Bushels..... 172	5.40	38
Other products.....	132			234
Total acres cultivated.....	40,112			44,878
Acres increase in 1892.....	4,766			

## MISCELLANEOUS, 1891.

Wild hay, tons.....	14,074	Honey, pounds.....	3,120
Timothy seed, bushels.....	31	Maple syrup, gallons, 1892.....	260
Clover seed, bushels.....	363	Butter, pounds.....	203,277
Apple trees, growing.....	735	Cheese, pounds.....	150
Apple trees, bearing.....	236	Wool, pounds, fall 1891.....	3,356
Apples, bushels.....	53	Wool, pounds, spring 1892.....	13,793
Grape vines, bearing.....	39	Land surface, acres, 1892.....	693,454.07
Grapes, pounds.....	30	Water surface, acres, 1892.....	3,564.78
Tobacco, pounds.....	928	Number of creameries, 1892.....	1
Bees, number of hives.....	117	Number of farms, 1892.....	839

## FARM STOCK, 1892.

Number of milch cows.....	4,786
Number of horses, all ages.....	4,241
Number of cattle, all ages, including milch cows.....	10,062
Number of sheep.....	3,439
Number of hogs.....	2,692
Personal property.....	\$701,018

MOWER COUNTY.

(Population 1890, 18,019; County seat, Austin.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	8,353	Bushels..... 132,296	15 80	9,195
Oats.....	55,076	"..... 2,106,084	38.20	60,167
Corn.....	18,065	"..... 497,647	27.50	11,548
Barley.....	31,971	"..... 1,169,707	36.60	42,702
Rye.....	396	"..... 7,069	17 80	622
Buckwheat.....	746	"..... 11,529	15.50	1,011
Potatoes.....	1,413	"..... 171,533	.....	1,679
Beans.....	10	"..... 234	.....	26
Cultivated hay.....	35,946	Tons..... 48,088	.....	52,901
Flax seed.....	32,759	Bushels..... 405,616	12.40	29,412
Other products.....	5,003	.....	.....	4,820
Total acres cultivated.....	189,738	.....	.....	214,083
Acres increase in 1892.....	24,345	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	26,120	Butter, pounds.....	1,102,968
Timothy seed, bushels.....	195,138	Cheese, pounds.....	3,400
Clover seed, bushels.....	718	Wool, pounds, fall 1891.....	6,822
Apple trees, growing.....	5,005	Wool, pounds, spring 1892.....	30,590
Apple trees, bearing.....	1,839	Land surface, acres, 1892.....	553,803.10
Apples, bushels.....	1,318	Water surface, acres, 1892.....	1,352.65
Grape vines, bearing.....	9	No. of cheese factories, 1892.....	1
Grapes, pounds.....	6	Number of creameries, 1892.....	1
Bees, number of hives.....	270	Number of farms, 1892.....	1,820
Honey, pounds.....	4,137	.....	.....

FARM STOCK, 1892.

Number of milch cows.....	13,069
Number of horses, all ages.....	10,612
Number of cattle, all ages, including milch cows.....	23,619
Number of sheep.....	5,662
Number of hogs.....	5,798
Personal property.....	1,399,677

MURRAY COUNTY.

(Population, 1890, 6,692; County seat, Slayton.)

FARM STOCK, 1892.

Number of milch cows.....	4,820
Number of horses, all ages.....	5,797
Number of cattle, all ages, including milch cows.....	9,211
Number of sheep.....	6,783
Number of hogs.....	1,964
Personal property.....	\$559,184

NICOLLET COUNTY.

(Population, 1890, 13,382; County seat, St. Peter.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	69,745	Bushels..... 1,275,975	18.30	70,220
Oats.....	17,770	"..... 658,760	37.10	17,950
Corn.....	14,975	"..... 505,670	33.80	15,785
Barley.....	1,055	"..... 28,000	26.50	1,705
Rye.....	215	"..... 6,770	31.50	520
Buckwheat.....	5	"..... 40	8.00	15
Potatoes.....	875	"..... 87,410	.....	995
Beans.....	35	"..... 330	.....	50
Sugar cane.....	135	Syrup, gal'ns 10,180	.....	190
Cultivated hay.....	1,960	Tons..... 3,795	.....	2,165
Flax seed.....	4,130	Bushels..... 51,310	12.40	3,020
Other products.....	220	.....	.....	760
Total acres cultivated.....	111,121	.....	.....	113,375
Acres increase in 1892.....	2,255	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	50,800	Maple syrup, gallons, 1892.....	100
Timothy seed, bushels.....	230	Butter, pounds.....	687,190
Clover seed, bushels.....	190	Cheese, pounds.....	9,630
Apple trees, growing.....	8,205	Wool, pounds, fall '91.....	18,430
Apple trees, bearing.....	4,235	Wool, pounds, spring '92.....	20,385
Apples, bushels.....	3,415	Land surface, acres, 1892.....	278,782.41
Grape vines, bearing.....	1,090	Water surface, acres, 1892.....	18,469.37
Grapes, pounds.....	3,570	Number of cheese factories, '92.....	1
Bees, number of hives.....	575	Number of creameries, 1892.....	3
Honey, pounds.....	17,050	Number of farms, 1892.....	1,356

## FARM STOCK, 1892.

Number of milch cows.....	8,136
Number of horses, all ages.....	7,760
Number of cattle, all ages, including milch cows.....	14,231
Number of sheep.....	3,145
Number of hogs.....	5,661
Personal property.....	\$1,036,803

## NOBLES COUNTY.

(Population, 1890, 7,958 ; County seat, Worthington.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	41,066	Bushels..... 692,172	16.90	56,861
Oats.....	29,978	"..... 994,249	33.20	53,134
Corn.....	15,716	"..... 298,080	19.00	12,367
Barley.....	12,977	"..... 349,509	26.90	21,511
Rye.....	851	"..... 11,280	13.30	1,631
Buckwheat.....	169	"..... 1,357	12.40	141
Potatoes.....	574	"..... 60,494	.....	666
Beans.....	28	"..... 506	.....	24
Cultivated hay.....	5,014	Tons..... 4,514	.....	9,257
Flax seed.....	18,265	Bushels..... 192,921	10.60	14,666
Other products.....	399	.....	.....	560
Total acres cultivated.....	124,977	.....	.....	151,018
Acres increase in 1892.....	26,041	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	35,832	Maple syrup, gallons, 1892.....	2
Timothy seed, bushels.....	5,003	Butter, pounds.....	332,360
Clover seed, bushels.....	252	Cheese, pounds.....	350
Apple trees, growing.....	7,165	Wool, pounds, fall '91.....	18,696
Apple trees, bearing.....	1,632	Wool, pounds, spring '92.....	25,623
Apples, bushels.....	508	Land surface, acres, 1892.....	454,877.12
Grape vines, bearing.....	191	Water surface, acres, 1892.....	10,827.04
Grapes, pounds.....	446	Number of creameries, 1892.....	3
Bees, number of hives.....	9	Number of farms, 1892.....	854
Honey, pounds.....	190	.....	.....

## FARM STOCK, 1892.

Number of milch cows.....	5,694
Number of horses, all ages.....	7,407
Number of cattle, all ages, including milch cows.....	11,659
Number of sheep.....	8,683
Number of hogs.....	3,782
Personal property.....	\$817,984



## NORMAN COUNTY.

(Population, 1890, 10,618 ; County seat, Ada.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	94,803	Bushels..... 1,774,286	18.70	96,735
Oats.....	19,103	"..... 622,612	32.60	18,180
Corn.....	79	"..... 1,463	18.50	61
Barley.....	3,821	"..... 130,236	34.10	6,704
Rye.....	56	"..... 1,325	23.70	79
Potatoes.....	504	"..... 70,484	.....	460
Beans.....	3	"..... 2	.....	3
Cultivated hay.....	3,732	Tons..... 6,605	.....	3,372
Flax seed.....	295	Bushels..... 2,300	7.80	48
Other products.....	7	.....	.....	88
Total acres cultivated.....	122,403	.....	.....	125,735
Acres increase in 1892.....	3,332	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	28,248	Cheese, pounds.....	1,925
Timothy seed, bushels.....	902	Wool, pounds, fall '91.....	6,295
Apple trees, growing.....	329	Wool, pounds, spring '92.....	19,612
Apple trees, bearing.....	3	Land surface, acres, 1892.....	918,472.60
Bees, number of hives.....	2	Water surface, acres, 1892.....	14,833.55
Honey, pounds.....	20	Number of creameries, 1892.....	2
Butter, pounds.....	380,676	Number of farms, 1892.....	1,526

## FARM STOCK, 1892.

Number of milch cows.....	6,898
Number of horses, all ages.....	6,475
Number of cattle, all ages, including milch cows.....	14,045
Number of sheep.....	5,714
Number of hogs.....	2,065
Personal property.....	\$811,597

## OLMSTED COUNTY

(Population, 1890, 19,806 ; County seat, Rochester.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	15,604	Bushels..... 256,042	16.40	17,983
Oats.....	32,420	"..... 1,384,552	42.70	33,232
Corn.....	22,658	"..... 649,677	28.70	24,095
Barley.....	38,858	"..... 1,183,524	30.50	48,025
Rye.....	1,203	"..... 21,219	17.60	2,152
Buckwheat.....	258	"..... 3,727	14.40	308
Potatoes.....	1,074	"..... 141,960	.....	1,047
Beans.....	11	"..... 202	.....	14
Sugar cane.....	14	Syrup, gal's..... 939	.....	10
Cultivated hay.....	29,171	Tons..... 45,903	.....	27,190
Flax seed.....	15,756	Bushels..... 209,617	13.30	13,223
Other products.....	5,147	.....	.....	3,984
Total acres cultivated.....	162,174	.....	.....	171,263
Acres increase in 1892.....	9,089	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	7,601	Maple syrup, gallons, 1892.....	410
Timothy seed, bushels.....	40,415	Butter, pounds.....	1,266,239
Clover seed, bushels.....	529	Cheese, pounds.....	213,977
Apple trees, growing.....	18,260	Wool, pounds, fall '91.....	25,905
Apple trees, bearing.....	10,932	Wool, pounds, spring '92.....	39,074
Apples, bushels.....	8,408	Land surface, acres, 1892.....	421,391.08
Grape vines, bearing.....	3,170	Water surface, acres, 1892.....	2,520.20
Grapes, pounds.....	4,517	Number of cheese factories, '92.....	3
Tobacco, pounds.....	9	Number of creameries, 1892.....	13
Bees, number of hives.....	807	Number of farms, 1892.....	1,822
Honey, pounds.....	12,325	.....	.....

## FARM STOCK, 1892.

Number of milch cows.....	13,901
Number of horses, all ages.....	11,244
Number of cattle, all ages, including milch cows.....	26,121
Number of sheep.....	14,401
Number of hogs.....	10,393
Personal property.....	\$2,009,220

## OTTER TAIL COUNTY.

(Population in 1890, 34,232; County seat, Fergus Falls.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield, per acre.	Acres, 1892.
Wheat .....	74,264	Bushels..... 1,505,426	20.30	79,664
Oats .....	17,228	"..... 531,414	30.80	17,207
Corn .....	3,064	"..... 74,204	24.20	1,879
Barley .....	1,460	"..... 46,139	31.60	1,855
Rye .....	262	"..... 5,571	21.30	105
Buckwheat.....	5	"..... 100	20.00	6
Potatoes.....	933	"..... 112,381		857
Beans.....	3	"..... 81		5
Cultivated hay .....	3,040	Tons..... 3,412		3,244
Flax seed.....	94	Bushels..... 1,131	12.00	106
Other products.....	128			152
Total acres cultivated.....	100,481			105,120
Acres increase in 1892.....	4,639			

## MISCELLANEOUS, 1891.

Wild hay, tons.....	24,788	Butter, pounds.....	438,281
Timothy seed, bushels.....	174	Cheese, pounds.....	18,900
Apple trees, growing.....	936	Wool, pounds, fall '91.....	10,447
Apple trees, bearing.....	430	Wool, pounds, spring '92.....	17,937
Apples, bushels.....	111	Land surface, acres, 1892.....	1,270,977.77
Grapes vines, bearing.....	1	Water surface, acres, 1892.....	162,748.67
Tobacco, pounds.....	525	Number of cheese factories, '92.....	2
Bees, number of hives.....	86	Number of creameries, 1892.....	1
Honey, pounds.....	920	Number of farms, 1892.....	1,657
Maple syrup, gallons, 1892.....	35		

## FARM STOCK, 1892.

Number of milch cows.....	15,185
Number of horses, all ages.....	14,467
Number of cattle, all ages, including milch cows.....	29,899
Number of sheep.....	11,000
Number of hogs.....	6,444
Personal property.....	\$1,667,28

## PINE COUNTY.

(Population, 1890, 4,052; County seat, Pine City.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield, per acre.	Acres, 1892.
Wheat .....	405	Bushels..... 6,624	16.40	563
Oats.....	422	"..... 13,514	32.00	644
Corn .....	101	"..... 2,694	26.70	101
Barley .....	116	"..... 996	8.60	56
Rye .....	29	"..... 478	16.50	51
Buckwheat.....	9	"..... 236	26.20	17
Potatoes.....	263	"..... 22,768		221
Beans.....	5	"..... 68		5
Cultivated hay .....	1,623	Tons..... 2,300		1,553
Flax seed.....	1	Bushels..... 2	2.00	11
Other products.....	102			49
Total acres cultivated.....	3,076			3,271
Acres increase in 1892.....	195			

MISCELLANEOUS, 1891.

Wild hay, tons.....	852	Butter, pounds.....	54,022
Timothy seed, bushels.....	3	Cheese, pounds.....	715
Apple trees, growing.....	231	Wool, pounds, fall 1891.....	1,101
Apple trees, bearing.....	93	Wool, pounds, spring 1892.....	1,008
Apples, bushels.....	30	Land surface, acres, 1892.....	908,632.83
Grape vines, bearing.....	10	Water surface, acres, 1892.....	15,845.68
Grapes, pounds.....	13	Number of farms, 1892.....	224
Tobacco, pounds.....	33		

FARM STOCK, 1892.

Number of milch cows.....	1,169
Number of horses, all ages.....	695
Number of cattle, all ages, including milch cows.....	2,514
Number of sheep.....	355
Number of hogs.....	574
Personal property.....	\$293,689

PIPESTONE COUNTY.

(Population, 1890, 5,132; County seat, Pipestone.)

FARM STOCK, 1892.

Number of milch cows.....	2,675
Number of horses, all ages.....	4,160
Number of cattle, all ages, including milch cows.....	4,706
Number of sheep.....	2,604
Number of hogs.....	1,257
Personal property.....	\$522,816

POLK COUNTY.

(Population, 1890, 30,192; County seat, Crookston.)

FARM STOCK, 1892.

Number of milch cows.....	13,905
Number of horses, all ages.....	14,960
Number of cattle, all ages, including milch cows.....	29,311
Number of sheep.....	9,058
Number of hogs.....	5,136
Personal property.....	\$2,184,005

POPE COUNTY.

(Population, 1890, 10,032; County seat, Glenwood.)

FARM STOCK, 1892.

Number of milch cows.....	7,455
Number of horses, all ages.....	7,314
Number of cattle, all ages, including milch cows.....	17,631
Number of sheep.....	3,805
Number of hogs.....	2,086
Personal property.....	\$729,866

RAMSEY COUNTY.

(Population, 1890, 139,796; County seat, St. Paul).

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892
Wheat.....	576	Bushels ..... 12,966	22.50	1,374
Oats.....	3,304	" ..... 131,847	39.90	3,519
Corn.....	941	" ..... 43,135	45.80	1,069
Barley.....	127	" ..... 4,788	37.70	312
Rye.....	116	" ..... 2,249	19.40	118
Buckwheat.....	38	" ..... 1,961	27.90	14
Potatoes.....	930	" ..... 117,735		1,070
Beans.....	13	" ..... 193		20
Sugar cane.....	1	Syrup, gallons 325		1
Cultivated hay.....	3,916	Tons ..... 4,859		3,755
Other products.....	2,581			2,273
Total acres cultivated.....	12,543			13,525
Acres increase in 1892.....	982			



## MISCELLANEOUS, 1891.

Wild hay, tons.....	2,620	Honey, pounds.....	80
Clover seed, bushels.....	62	Butter, pounds.....	42,543
Apple trees, growing.....	1,002	Cheese, pounds.....	500
Apple trees, bearing.....	247	Wool, pounds, fall 1891.....	1,148
Apples, bushels.....	217	Wool, pounds, spring 1892.....	1,729
Grape vines, bearing.....	1,446	Land surface, acres, 1892.....	111,168.71
Grapes, pounds.....	3,800	Water surface, acres, 1892.....	8,605.34
Tobacco, pounds.....	55	Number of farms, 1892.....	221
Bees, number of hives.....	6		

## FARM STOCK, 1892.

Number of milch cows.....	7,360
Number of horses, all ages.....	6,915
Number of cattle, all ages, including milch cows.....	4,811
Number of sheep.....	1,061
Number of hogs.....	828
Personal property.....	\$17,376.442

## REDWOOD COUNTY.

(Population, 1890, 9,386; County seat, Redwood Falls.)

## AGRICULTURE.

Product.	Acres. 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	64,564	Bushels .....1,150,186	17.80	82,301
Oats.....	20,885	" ..... 600,236	28.70	22,773
Corn.....	10,176	" ..... 214,219	21.10	10,258
Barley.....	1,126	" ..... 32,297	28.70	2,742
Rye.....	13	" ..... 223	17.20	59
Buckwheat.....	2	" ..... 50	25.00	4
Potatoes.....	468	" ..... 36,968		484
Beans.....	2	" ..... 31		7
Sugar cane.....	1	Syrup, gal'ns ..... 130		2
Cultivated hay.....	663	Tons..... 1,075		773
Flax seed.....	13,073	Bushels..... 126,794	9.70	5,118
Other products.....	200			839
Total acres cultivated.....	111,173			125,360
Acres increase in 1892.....	14,187			

## MISCELLANEOUS, 1891.

Wild hay, tons.....	34,904	Butter, pounds.....	201,480
Timothy seed, bushels.....	136	Cheese, pounds.....	3,935
Clover seed, bushels.....	30	Wool, pounds, fall '91.....	12,308
Apple trees, growing.....	3,582	Wool, pounds, spring '92.....	25,189
Apple trees, bearing.....	772	Land surface, acres, 1892.....	557,122.74
Apples, bushels.....	181	Water surface, acres, 1892.....	14,930.13
Grape vines, bearing.....	212	Number of cheese factories, '92.....	2
Grapes, pounds.....	203	Number of creameries, 1892.....	1
Bees, number of hives.....	37	Number of farms, 1892.....	925
Honey, pounds.....	255		

## FARM STOCK, 1892.

Number of milch cows.....	8,091
Number of horses, all ages.....	8,565
Number of cattle, all ages, including milch cows.....	16,643
Number of sheep.....	8,980
Number of hogs.....	2,680
Personal property.....	\$943,502

RENVILLE COUNTY.

(Population, 1890, 17,099 ; County seat, Beaver Falls.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	106,474	Bushels.....1,773,664	16.70	110,120
Oats.....	20,138	".....762,535	37.90	21,694
Corn.....	10,893	".....260,455	23.90	12,031
Barley.....	1,628	".....37,332	29.10	2,330
Rye.....	50	".....723	14.50	78
Buckwheat.....	21	".....151	7.20	14
Potatoes.....	692	".....44,299	.....	737
Beans.....	13	".....68	.....	11
Sugar cane.....	9	Syrup,gallons.....468	.....	7
Cultivated hay.....	1,203	Tons.....1,953	.....	1,568
Flax seed.....	11,429	Bushels.....121,718	10.70	3,671
Other products.....	10	.....	.....	25
Total acres cultivated.....	152,560	.....	.....	152,306

MISCELLANEOUS, 1891.

Wild hay, tons.....	50,299	Bees, number of hives.....	51
Timothy seed, bushels.....	289	Honey, pounds.....	146
Clover seed, bushels.....	110	Butter, pounds.....	413,855
Apple trees, growing.....	2,481	Cheese, pounds.....	325
Apple trees, bearing.....	430	Wool, pounds, fall 1891.....	15,576
Apples, bushels.....	147	Wool, pounds, spring 1892.....	16,936
Grape vines, bearing.....	131	Land surface, acres, 1892.....	621,650.89
Grapes, pounds.....	225	Water surface, acres, 1892.....	6,385.69
Tobacco, pounds.....	23	Number of farms, 1892.....	819

FARM STOCK, 1892.

Number of milch cows.....	11,366
Number of horses, all ages.....	12,365
Number of cattle, all ages, including milch cows.....	21,522
Number of sheep.....	6,025
Number of hogs.....	4,325
Personal property.....	\$1,158,052

RICE COUNTY.

(Population, 1890, 23,968 ; County seat, Faribault.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield, per acre.	Acres, 1892.
Wheat.....	45,814	Bushels.....864,779	18.90	49,820
Oats.....	26,067	".....965,774	37.10	26,378
Corn.....	16,290	".....506,175	31.10	17,004
Barley.....	1,187	".....41,475	34.90	1,829
Rye.....	2,420	".....42,836	17.70	3,648
Buckwheat.....	207	".....9,821	47.40	198
Potatoes.....	870	".....74,752	.....	1,160
Beans.....	13	".....350	.....	32
Sugar cane.....	61	Syrup,gallons.....4,774	.....	22
Cultivated hay.....	9,793	Tons.....12,460	.....	9,560
Flax seed.....	4,480	Bushels.....59,614	13.30	3,660
Other products.....	468	.....	.....	417
Total acres cultivated.....	107,670	.....	.....	113,728
Acres increase in 1892.....	6,058	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	29,589	Maple syrup, gallons, 1892.....	500
Timothy seed, bushels.....	1,024	Butter, pounds.....	558,301
Clover seed, bushels.....	1,537	Cheese, pounds.....	5,460
Apple trees, growing.....	4,530	Wool, pounds, fall, 1891.....	17,280
Apple trees, bearing.....	2,646	Wool, pounds, spring 1892.....	26,353
Apples, bushels.....	2,612	Land surface, acres, 1892.....	311,505.87
Grape vines, bearing.....	765	Water surface, acres, 1892.....	11,054.83
Grapes, pounds.....	3,220	Number of cheese factories, '92.....	1
Bees, number of hives.....	1,251	Number of creameries, 1892.....	11
Honey, pounds.....	16,810	Number of farms, 1892.....	1,856

## FARM STOCK, 1892.

Number of milch cows.....	11,636
Number of horses, all ages.....	7,993
Number of cattle, all ages, including milch cows.....	19,354
Number of sheep.....	5,589
Number of hogs.....	5,541
Personal property.....	\$1,849,287

## ROCK COUNTY.

(Population 1890, 6,817; County seat, Luverne.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	33,477	Bushels..... 644,285	19.20	44,191
Oats.....	25,472	"..... 999,057	39.20	27,199
Corn.....	19,301	"..... 488,755	25.30	16,016
Barley.....	15,599	"..... 506,114	32.40	24,508
Rye.....	413	"..... 4,769	11.50	275
Buckwheat.....	24	"..... 190	8.00	8
Potatoes.....	534	"..... 49,872		458
Beans.....	12	"..... 228		15
Cultivated hay.....	3,959	Tons..... 5,876		5,765
Flax seed.....	10,026	Bushels..... 116,593	10.60	4,678
Other products.....	91			480
Total acres cultivated.....	108,908			123,693
Acres increase in 1892.....	14,785			

## MISCELLANEOUS, 1891.

Wild hay, tons.....	17,395	Honey, pounds.....	1,710
Timothy seed, bushels.....	5,819	Maple syrup, gallons, 1892.....	6
Clover seed, bushels.....	408	Butter, pounds.....	343,833
Apple trees, growing.....	8,197	Cheese, pounds.....	225
Apple trees, bearing.....	1,931	Wool, pounds, fall 1891.....	6,348
Apples, bushels.....	659	Wool, pounds, spring 1892.....	18,273
Grape vines, bearing.....	339	Land surface, acres, 1892.....	307,736.11
Grapes, pounds.....	1,970	Water surface, acres, 1892.....	1,174.04
Tobacco, pounds.....	25	Number of creameries, 1892.....	1
Bees, number of hives.....	74	Number of farms, 1892.....	975

## FARM STOCK, 1892.

Number of milch cows.....	4,889
Number of horses, all ages.....	5,876
Number of cattle, all ages, including milch cows.....	9,349
Number of sheep.....	3,379
Number of hogs.....	5,383
Personal property.....	\$699,887

## ST. LOUIS COUNTY.

(Population 1890, 44,862; County seat, Duluth.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	3	Bushels..... 24	8.00	4
Oats.....	231	"..... 1,929	8.40	316
Barley.....	40	"..... 606	15.00	57
Rye.....	30	"..... 318	10.60	44
Potatoes.....	297	"..... 33,954		342
Cultivated hay.....	2,119	Tons..... 1,767		2,386
Other products.....	91			84
Total acres cultivated.....	2,811			3,233
Acres increase in 1892.....	422			



MISCELLANEOUS, 1891.

Wild hay, tons.....	405	Cheese, pounds.....	37
Apple trees, growing.....	81	Wool, pounds, fall 1891.....	182
Apple trees, bearing.....	6	Wool, pounds, spring 1892.....	221
Tobacco, pounds.....	60	Land surface, acres, 1892.....	3,735,846.26
Bees, number of hives.....	93	Water surface, acres, 1892.....	495,674.68
Honey, pounds.....	6,550	Number of farms, 1892.....	238
Butter, pounds.....	19,719		

FARM STOCK, 1892.

Number of milch cows.....	1,872
Number of horses, all ages.....	2,710
Number of cattle, all ages, including milch cows.....	2,197
Number of sheep.....	1,109
Number of hogs.....	401
Personal property.....	\$6,080,222

SCOTT COUNTY.

(Population, 1890, 13,831 ; County seat, Shakopee.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	19,135	Bushels..... 443,634	23.20	23,450
Oats.....	5,763	"..... 223,870	38.90	7,084
Corn.....	6,644	"..... 219,465	33.00	7,870
Barley.....	323	"..... 8,121	25.10	309
Rye.....	1,101	"..... 20,847	18.90	2,274
Buckwheat.....	15	"..... 134	8.90	7
Potatoes.....	594	"..... 58,050		676
Beans.....	1	"..... 10		6
Sugar cane.....	40	Syrup, gal's.. 2,426		32
Cultivated hay.....	1,029	Tons..... 1,095		897
Flax seed.....	139	Bushels..... 1,364	9.80	63
Other products.....	125			113
Total acres cultivated.....	34,909			42,781
Acres increase in 1892.....	7,872			

MISCELLANEOUS, 1891.

Wild hay, tons.....	8,007	Honey, pounds.....	1,850
Timothy seed, bushels.....	3	Butter, pounds.....	210,295
Clover seed, bushels.....	759	Cheese, pounds.....	20,000
Apple trees, growing.....	1,235	Wool, pounds, fall '91.....	184
Apple trees, bearing.....	773	Wool, pounds, spring '92.....	3,288
Apples, bushels.....	1,440	Land surface, acres, 1892.....	219,344.22
Grape vines, bearing.....	2,642	Water surface, acres, 1892.....	10,157.58
Grapes, pounds.....	3,639	No. of cheese factories, 1892.....	2
Bees, number of hives.....	151	Number of farms, 1892.....	384

FARM STOCK, 1892.

Number of milch cows.....	7,285
Number of horses, all ages.....	5,222
Number of cattle, all ages, including milch cows.....	12,049
Number of sheep.....	3,477
Number of hogs.....	5,624
Personal property.....	\$870,623

## SHERBURNE COUNTY.

(Population, 1890, 5,908; County seat, Elk River.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	6,359	Bushels ..... 75,146	11.80	7,625
Oats.....	5,393	" ..... 97,193	18.00	6,016
Corn.....	8,367	" ..... 118,882	14.20	8,514
Barley.....	58	" ..... 1,731	29.90	99
Rye.....	4,313	" ..... 51,345	11.90	6,198
Buckwheat.....	58	" ..... 486	8.40	61
Potatoes.....	764	" ..... 68,561		724
Beans.....	81	" ..... 549		74
Sugar cane.....	14	Syrup, gal's.. 367		14
Cultivated hay.....	1,300	Tons ..... 970		933
Flax seed.....	35	Bushels ..... 266	7.60	10
Other products.....	67			72
Total acres cultivated.....	26,809			30,340
Acres increase in 1892.....	3,531			

## MISCELLANEOUS, 1891.

Wild hay, tons.....	10,659	Butter, pounds.....	178,995
Timothy seed, bushels.....	51	Cheese, pounds.....	600
Apple trees, growing.....	384	Wool, pounds, fall '91.....	1,245
Apple trees, bearing.....	203	Wool, pounds, spring '92.....	1,257
Apples, bushels.....	121	Land surface, acres, 1892.....	287,180.40
Grape vines, bearing.....	49	Water surface, acres, 1892.....	12,905.72
Grapes, pounds.....	5	No. of cheese factories, 1892.....	1
Bees, number of hives.....	208	Number of creameries, 1892.....	1
Honey, pounds.....	5,815	Number of farms, 1892.....	414
Maple syrup, gallons, 1892.....	30		

## FARM STOCK, 1892.

Number of milch cows.....	332
Number of horses, all ages.....	2,833
Number of cattle, all ages, including milch cows.....	3,618
Number of sheep.....	857
Number of hogs.....	1,786
Personal property.....	\$331,719

## SIBLEY COUNTY.

(Population, 1890, 15,199; County seat, Henderson.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	84,003	Bushels .... 1,590,818	18.90	87,251
Oats.....	17,264	" ..... 765,132	44.30	18,898
Corn.....	13,403	" ..... 473,055	35.30	14,177
Barley.....	1,866	" ..... 57,699	30.90	2,404
Rye.....	1,034	" ..... 10,575	10.20	1,055
Buckwheat.....	36	" ..... 570	15.80	16
Potatoes.....	1,006	" ..... 82,299		1,030
Beans.....	20	" ..... 352		14
Sugar cane.....	72	Syrup, galls 6,182		69
Cultivated hay.....	421	Tons ..... 747		529
Flax seed.....	3,074	Bushels .... 38,785	12.60	886
Other products.....	174			185
Total acres cultivated.....	122,373			126,514
Acres increase in 1892.....	4,141			

MISCELLANEOUS, 1891.

Wild hay, tons.....	45,753	Maple syrup, gallons, 1892 .....	100
Timothy seed, bushels .....	162	Butter, pounds .....	398,735
Clover seed, bushels .....	26	Cheese, pounds.....	20,660
Apple trees, growing.....	5,509	Wool, pounds, fall 1891.....	8,641
Apple trees, bearing .....	1,836	Wool, pounds, spring 1892.....	18,731
Apples, bushels .....	1,469	Land surface, acres, 1892 .....	362,808 14
Grape vines, bearing.....	448	Water surface, acres, 1892 .....	19,737.61
Grapes, pounds.....	792	Number of cheese factories, 1892 .....	2
Tobacco, pounds .....	463	Number of creameries, 1892. ....	6
Bees, number of hives .....	555	Number of farms, 1892.....	1,901
Honey, pounds .....	7,173		

FARM STOCK, 1892.

Number of milch cows.....	11,159
Number of horses, all ages.....	8,805
Number of cattle, all ages, including milch cows.....	17,818
Number of sheep .....	4,675
Number of hogs .....	6,618
Personal property.....	\$957,979

STEARNS COUNTY.

(Population, 1890, 34,844 ; County seat, St. Cloud.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat .....	117,269	Bushels .... 1,948,391	16.60	122,936
Oats .....	27,246	" .... 821,148	30.10	28,186
Corn .....	11,926	" .... 263,245	22.10	11,306
Barley .....	2,028	" .... 62,415	30.70	3,029
Rye .....	1,007	" .... 17,476	17.40	1,214
Buckwheat.....	91	" .... 1,046	11.50	55
Potatoes .....	2,257	" .... 173,578		2,251
Beans .....	15	" .... 122		15
Sugar cane .....	22	Syrup, galls .. 1,781		20
Cultivated hay .....	3,114	Tons .... 3,236		2,665
Flax seed .....	1,511	Bushels .... 13,131	8.70	696
Other products.....	329			289
Total acres cultivated .....	166,815			172,662
Acres increase in 1892 .....	5,847			

MISCELLANEOUS, 891.

Wild hay, tons.....	51,528	Honey, pounds .....	11,810
Timothy seed, bushels.....	102	Butter, pounds .....	535,463
Clover seed, bushels .....	12	Cheese, pounds .....	58,710
Apple trees, growing.....	1,913	Wool, pounds, fall 1891.....	5,876
Apple trees, bearing .....	947	Wool, pounds, spring 1892.....	19,396
Apples, bushels .....	779	Land surface, acres, 1892 .....	814,230.09
Grape vines, bearing.....	25	Water surface, acres, 1892 .....	37,021.27
Grapes, pounds.....	327	Number of cheese factories, 1892 .....	2
Tobacco, pounds .....	198	Number of creameries, 1892.....	4
Bees, number of hives.....	395	Number of farms, 1892 .....	2,148

FARM STOCK, 1892.

Number of milch cows.....	14,611
Number of horses, all ages.....	12,999
Number of cattle, all ages, including milch cows.....	28,423
Number of sheep .....	5,829
Number of hogs .....	8,291
Personal property.....	\$2,191,588



## STEELE COUNTY.

(Population, 1890, 13,232; County seat, Owatonna.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres. 1892.
Wheat.....	31,617	Bushels..... 539,609	17.10	35,640
Oats.....	20,239	"..... 722,204	35.70	20,247
Corn.....	16,864	"..... 452,543	26.80	13,217
Barley.....	3,379	"..... 84,494	25.00	4,059
Rye.....	2,233	"..... 45,938	20.60	3,635
Buckwheat.....	81	"..... 1,139	14.00	31
Potatoes.....	967	"..... 102,863	.....	942
Beans.....	10	"..... 146	.....	28
Sugar cane.....	3	Syrup, galls.. 449	.....	1
Cultivated hay.....	7,157	Tons..... 12,229	.....	7,367
Flax seed.....	3,328	Bushels..... 35,123	10.60	2,279
Other products.....	106	.....	.....	509
Total acres cultivated.....	85,984	.....	.....	87,955
Acres increase in 1892.....	1,971	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	32,579	Maple syrup, gallons, 1892.....	10
Timothy seed, bushels.....	2,001	Butter, pounds.....	638,964
Clover seed, bushels.....	288	Cheese, pounds.....	376,607
Apple trees, growing.....	7,973	Wool, pounds, fall 1891.....	15,438
Apple trees, bearing.....	3,541	Wool, pounds, spring 1892.....	18,790
Apples, bushels.....	1,189	Land surface, acres, 1892.....	272,761.47
Grape vines, bearing.....	231	Water surface, acres, 1892.....	2,817.69
Grapes, pounds.....	665	No. of cheese factories, 1892.....	4
Tobacco, pounds.....	50	Number of creameries, 1892.....	9
Bees, number of hives.....	264	Number of farms, 1892.....	930
Honey, pounds.....	5,826		

## FARM STOCK, 1892.

Number of milch cows.....	11,342
Number of horses, all ages.....	6,518
Number of cattle, all ages, including milch cows.....	20,289
Number of sheep.....	6,219
Number of hogs.....	5,488
Personal property.....	\$1,233,923

## STEVENS COUNTY.

(Population, 1890, 5,251; County seat, Morris.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres. 1892.
Wheat.....	44,040	Bushels..... 803,220	18.20	50,550
Oats.....	17,045	"..... 584,700	30.40	20,850
Corn.....	1,225	"..... 28,540	23.30	405
Barley.....	1,555	"..... 35,470	22.80	1,650
Rye.....	10	"..... 220	22.00	20
Buckwheat.....	75	"..... 1,450	19.30	50
Potatoes.....	470	"..... 45,170	.....	645
Beans.....	48	"..... 702	.....	100
Cultivated hay.....	1,410	Tons..... 1,467	.....	1,145
Flax seed.....	7,280	Bushels..... 84,120	11.60	3,850
Other products.....	155	.....	.....	210
Total acres cultivated.....	73,313	.....	.....	79,475
Acres increase in 1892.....	6,162	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	26,510	Honey, pounds.....	1,550
Timothy seed, bushels.....	50	Butter, pounds.....	205,800
Clover seed, bushels.....	30	Cheese, pounds.....	44,000
Apple trees, growing.....	950	Wool, pounds, fall 1891.....	250
Apple trees, bearing.....	455	Wool, pounds, spring 1892.....	12,820
Apples, bushels.....	165	Land surface, acres, 1892.....	355,336.19
Grape vines, bearing.....	13	Water surface, acres, 1892.....	10,411.81
Tobacco, pounds.....	50	No. of cheese factories, 1892.....	1
Bees, number of hives.....	66	Number of farms, 1892.....	782

FARM STOCK, 1892.

Number of milch cows.....	3,046
Number of horses, all ages.....	4,154
Number of cattle, all ages, including milch cows.....	6,523
Number of sheep.....	2,560
Number of hogs.....	945
Personal property.....	\$498,041

SWIFT COUNTY.

(Population, 1890, 10,161; County seat, Benson).

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	63,184	Bushels .... 1,078,744	17.10	74,033
Oats.....	18,299	" .... 476,991	26.10	20,501
Corn.....	2,438	" .... 55,101	22.60	2,271
Barley.....	1,366	" .... 30,454	22.30	2,364
Rye.....	41	" .... 785	19.10	39
Buckwheat.....	4	" .... 105	26.20	.....
Potatoes.....	456	" .... 35,148	.....	427
Beans.....	1	" .... 3	.....	10
Sugar cane.....	.....	Syrup, gallons.....	.....	1
Cultivated hay.....	808	Tons..... 1,139	.....	1,042
Flax seed.....	7,838	Bushels..... 71,637	9.10	2,464
Other products.....	5	.....	.....	44
Total acres cultivated.....	94,440	.....	.....	103,196
Acres increase in 1892.....	8,756	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	36,330	Cheese, pounds.....	1,430
Apple trees, growing.....	577	Wool, pounds, fall 1891.....	6,727
Apple trees, bearing.....	145	Wool, pounds, spring 1892.....	9,333
Apples, bushels.....	92	Land surface, acres, 1892.....	475,553.36
Grape vines, bearing.....	38	Water surface, acres, 1892.....	9,392.08
Butter, pounds.....	230,465	Number of farms, 1892.....	1,104

FARM STOCK, 1892.

Number of milch cows.....	6,286
Number of horses, all ages.....	7,028
Number of cattle, all ages, including milch cows.....	13,863
Number of sheep.....	2,997
Number of hogs.....	2,120
Personal property.....	\$751,647

TODD COUNTY.

(Population, 1890, 12,930; County seat, Long Prairie).

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	23,952	Bushels .... 448,938	18.70	29,262
Oats.....	5,232	" .... 160,585	30.70	6,514
Corn.....	1,887	" .... 48,905	25.90	1,565
Barley.....	313	" .... 9,224	29.80	498
Rye.....	298	" .... 5,500	18.50	302
Buckwheat.....	32	" .... 744	23.30	12
Potatoes.....	576	" .... 62,157	.....	582
Beans.....	29	" .... 284	.....	40
Cultivated hay.....	866	Tons ..... 1,138	.....	716
Flax seed.....	198	Bushels..... 1,900	9.60	4
Other products.....	244	.....	.....	151
Total acres cultivated.....	33,627	.....	.....	39,646
Acres increase in 1892.....	6,019	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	17,067	Maple syrup, gallons, 1892.....	87
Timothy seed, bushels.....	96	Butter, pounds.....	224,730
Apple trees, growing.....	1,161	Cheese, pound.....	4,182
Apple trees, bearing.....	240	Wool, pounds, fall 1891.....	5,874
Apples, bushels.....	130	Wool, pounds, spring 1892.....	11,822
Grape vines, bearing.....	12	Land surface, acres, 1892.....	618,225.14
Tobacco, pounds.....	270	Water surface, acres, 1892.....	27,111.58
Bees, number of hives.....	42	Number of farms, 1892.....	834
Honey, pounds.....	500		

## FARM STOCK, 1892.

Number of milch cows.....	5,733
Number of horses, all ages.....	4,588
Number of cattle, all ages, including milch cows.....	11,482
Number of sheep.....	4,541
Number of hogs.....	2,578
Personal property.....	\$635,092

## TRAVERSE COUNTY.

(Population, 1890, 4,516; County seat, Wheaton.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	55,147	Bushels ... 728,021	13.20	61,289
Oats.....	9,109	"..... 243,859	26.80	11,218
Corn.....	1,210	"..... 20,174	16.70	889
Barley.....	1,723	"..... 46,643	27.10	2,524
Rye.....				15
Buckwheat.....	4	Bushels..... 70	17.50	
Potatoes.....	240	"..... 17,499		322
Beans.....	2	"..... 53		1
Cultivated hay.....	825	Tons..... 1,141		1,187
Flax seed.....	446	Bushels..... 2,186	4.90	37
Other products.....	105			133
Total acres cultivated.....	68,811			77,615
Acres increase in 1892.....	8,804			

## MISCELLANEOUS, 1891.

Wild hay, tons.....	9,341	Wool, pounds, fall 1891.....	447
Apple trees, growing.....	983	Wool, pounds, spring 1892.....	580
Apple trees, bearing.....	84	Land surface, acres, 1892.....	363,463.46
Apples, bushels.....	33	Water surface, acres 1892.....	8,906.00
Butter, pounds.....	92,390	Number of creameries, 1892.....	1
Cheese, pounds.....	645	Number of farms, 1892.....	410

## FARM STOCK, 1892.

Number of milch cows.....	2,035
Number of horses, all ages.....	3,882
Number of cattle, all ages, including milch cows.....	4,006
Number of sheep.....	343
Number of hogs.....	771
Personal property.....	\$353,130



## WABASHA COUNTY.

(Population, 1890, 16,972; County seat, Wabasha.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	7,701	Bushels ..... 107,326	13.90	7,304
Oats.....	9,140	" ..... 242,815	26.60	9,772
Corn.....	6,730	" ..... 193,275	28.70	6,595
Barley.....	12,973	" ..... 332,881	25.70	15,346
Rye.....	592	" ..... 9,519	16.10	472
Buckwheat.....	127	" ..... 892	7.00	47
Potatoes.....	557	" ..... 37,835		711
Beans.....	1	" ..... 37		250
Sugar cane.....	1	Syrup, gallons..... 50		5
Cultivated hay.....	4,637	Tons ..... 7,120		4,216
Flax seed.....	601	Bushels ..... 7,707	12.80	505
Other products.....	878			834
Total acres cultivated.....	43,938			46,057
Acres increase in 1892.....	2,119			

## MISCELLANEOUS, 1891.

Wild hay, tons.....	512	Honey, pounds.....	5,240
Timothy seed, bushels.....	1,374	Butter, pounds.....	175,230
Clover seed, bushels.....	155	Cheese, pounds.....	1,065
Apple trees, growing.....	5,216	Wool, pounds, fall 1891.....	4,173
Apple trees, bearing.....	2,324	Wool, pounds, spring 1892.....	2,724
Apples, bushels.....	2,337	Land surface, acres, 1892.....	355,544.17
Grape vines, bearing.....	98	Water surface, acres, 189.2.....	25,018.07
Grapes, pounds.....	531	Number of creameries, 1892.....	3
Bees, number of hives.....	256	Number of farms, 1892.....	359

## FARM STOCK, 1892.

Number of milch cows.....	7,538
Number of horses, all ages.....	6,987
Number of cattle, all ages, including milch cows.....	14,410
Number of sheep.....	5,967
Number of hogs.....	8,185
Personal property.....	\$1,167,891

## WADENA COUNTY.

(Population, 1890, 4,053; County seat, Wadena.)

## AGRICULTURE.

Prodnet.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	13,582	Bushels ..... 241,609	17.80	15,813
Oats.....	3,576	" ..... 89,091	24.90	3,772
Corn.....	1,398	" ..... 35,022	25.10	1,046
Barley.....	120	" ..... 2,640	22.00	166
Rye.....	679	" ..... 11,811	17.40	547
Buckwheat.....	17	" ..... 266	15.60	36
Potatoes.....	331	" ..... 39,639		312
Beans.....	4	" ..... 68		6
Cultivated hay.....	109	Tons ..... 168		124
Flax seed.....	8	Bushels ..... 120	15.00	
Other products.....	91			118
Total acres cultivated.....	19,915			21,940
Acres increase in 1892.....	2,025			

## MISCELLANEOUS, 1891.

Wild hay, tons.....	4,195	Butter, pounds.....	89,957
Timothy seed, bushels.....	100	Wool, pounds, fall 1891.....	4,147
Apple trees, growing.....	324	Wool, pounds, spring 1892.....	3,205
Apple trees, bearing.....	3	Land surface, acres, 1892.....	452,751.16
Grape vines, bearing.....	5	Water surface, acres, 1892.....	6,828.84
Bees, number of hives.....	2	Number of cheese factories, '92.....	1
Honey, pounds.....	40	Number of farms, 1892.....	455

## FARM STOCK, 1892.

Number of milch cows.....	1,549
Number of horses, all ages.....	1,708
Number of cattle, all ages, including milch cows.....	2,897
Number of sheep.....	1,503
Number of hogs.....	682
Personal property.....	\$347,469

## WASECA COUNTY.

(Population, 1890, 13,313; County seat. Waseca.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	28,855	Bushels ..... 467,020	16.20	31,021
Oats.....	10,250	" ..... 382,554	37.30	10,994
Corn.....	9,315	" ..... 329,660	36.50	9,619
Barley.....	429	" ..... 12,069	28.10	376
Rye.....	55	" ..... 1,283	23.30	112
Buckwheat.....	30	" ..... 282	9.40	5
Potatoes.....	638	" ..... 56,617	.....	695
Beans.....	5	" ..... 65	.....	6
Sugar cane.....	13	Syrup, gal's.. 1,030	.....	15
Cultivated hay.....	1,729	Tons ..... 2,607	.....	2,036
Flax seed.....	1,671	Bushels ..... 16,449	9.80	601
Other products.....	8,358	.....	.....	6,379
Total acres cultivated.....	61,348	.....	.....	61,859
Acres increase in 1892....	511	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	15,920	Honey, pounds.....	1,240
Timothy seed, bushels.....	172	Butter, pounds.....	277,000
Clover seed, bushels.....	484	Cheese, pounds.....	300
Apple trees, growing.....	2,898	Wool, pounds, fall '91.....	6,419
Apple trees, bearing.....	1,223	Wool, pounds, spring '92.....	8,875
Apples, bushels.....	424	Land surface, acres, 1892.....	268,161.75
Grape vines, bearing.....	175	Water surface, acres, 1892.....	11,524.16
Grapes, pounds.....	71	Number of creameries, 1892.....	2
Bees, number of hives.....	163	Number of farms, 1892.....	752

## FARM STOCK, 1892.

Number of milch cows.....	8,469
Number of horses, all ages.....	6,770
Number of cattle, all ages, including milch cows.....	15,207
Number of sheep.....	4,022
Number of hogs.....	4,777
Personal property.....	\$800,075

## WASHINGTON COUNTY.

(Population, 1890, 25,992; County seat, Stillwater.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield, per acre.	Acres, 1892.
Wheat.....	15,120	Bushels ..... 249,789	16.50	19,948
Oats.....	19,895	" ..... 711,446	35.80	19,264
Corn.....	9,014	" ..... 259,592	28.80	8,284
Barley.....	5,255	" ..... 162,924	31.00	7,114
Rye.....	3,270	" ..... 64,610	19.80	4,801
Buckwheat.....	232	" ..... 1,569	6.80	142
Potatoes.....	1,982	" ..... 249,654	.....	1,734
Beans.....	126	" ..... 1,243	.....	90
Cultivated hay.....	17,236	Tons ..... 20,340	.....	16,035
Flax seed.....	966	Bushels ..... 10,403	10.80	548
Other products.....	2,098	.....	.....	2,093
Total acres cultivated.....	75,194	.....	.....	80,053
Acres increase in 1892.....	4,859	.....	.....	.....

MISCELLANEOUS.

Wild hay, tons.....	2,237	Bees, number of hives.....	831
Timothy seed, bushels.....	292	Honey, pounds.....	6,980
Clover seed, bushels.....	308	Butter, pounds.....	577,855
Apple trees, growing.....	4,259	Cheese, pounds.....	1,625
Apple trees, bearing.....	2,186	Wool, pounds, fall '91.....	8,822
Apples, bushels.....	2,045	Wool, pounds, spring '92.....	13,645
Grape vines, bearing.....	1,744	Land surface, acres, 1892.....	261,675.04
Grapes, pounds.....	4,016	Water surface, acres, 1892.....	13,530.31
Tobacco, pounds.....	20	Number of farms, 1892.....	1,029

FARM STOCK, 1892.

Number of milch cows.....	6,279
Number of horses, all ages.....	5,070
Number of cattle, all ages, including milch cows.....	9,898
Number of sheep.....	2,934
Number of hogs.....	3,688
Personal property.....	\$2,593,318

WATONWAN COUNTY.

(Population, 1890, 7,746; County seat, St. James.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	34,752	Bushels..... 573,711	16.50	44,901
Oats.....	20,811	"..... 651,408	31.30	21,650
Corn.....	13,808	"..... 313,633	22.70	11,896
Barley.....	1,681	"..... 35,443	21.10	2,258
Rye.....	48	"..... 627	12.90	112
Buckwheat.....	43	"..... 365	8.50	27
Potatoes.....	309	"..... 23,699		352
Beans.....	10	"..... 88		4
Sugar cane.....	31	Syrup, gall's, 3,425		32
Cultivated hay.....	822	Tons..... 1,763		2,062
Flax seed.....	13,128	Bushels..... 150,557	11.50	5,323
Other products.....	129			109
Total acres cultivated.....	85,572			88,726
Acres increase in 1892.....	3,154			

MISCELLANEOUS, 1891.

Wild hay, tons.....	28,566	Honey, pounds.....	543
Timothy seed, bushels.....	2,406	Butter, pounds.....	386,009
Clover seed, bushels.....	90	Cheese, pounds.....	375
Apple trees, growing.....	3,351	Wool, pounds, fall '91.....	5,364
Apple trees, bearing.....	682	Wool, pounds, spring '92.....	10,248
Apples, bushels.....	402	Land surface, acres, 1892.....	277,051.92
Grape vines, bearing.....	121	Water surface, acres, 1892.....	1,638.00
Grapes, pounds.....	639	Number of creameries, 1892.....	1
Tobacco, pounds.....	23	Number of farms, 1892.....	945
Bees, number of hives.....	57		

FARM STOCK, 1892.

Number of milch cows.....	7,368
Number of horses, all ages.....	5,810
Number of cattle, all ages, including milch cows.....	12,053
Number of sheep.....	5,010
Number of hogs.....	4,302
Personal property.....	\$698,233



## WILKIN COUNTY.

(Population 1890, 4,346; County seat, Breckenridge.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	29,078	Bushels..... 534,631	18.40	37,483
Oats.....	6,135	"..... 215,923	35.20	6,783
Corn.....	72	"..... 870	12.10	90
Barley.....	1,709	"..... 50,601	29.60	2,101
Rye.....	56	"..... 990	17.70	95
Potatoes.....	120	"..... 15,153	.....	148
Beans.....	6	"..... 82	.....	3
Cultivated hay.....	247	Tons..... 503	.....	441
Flax seed.....	690	Bushels..... 6,293	9.10	118
Other products.....	5	.....	.....	30
Total acres cultivated.....	38,118	.....	.....	47,292
Acres increase in 1892.....	9,174	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	6,528	Wool, pounds, fall 1891.....	534
Timothy seed, bushels.....	14	Wool, pounds, spring 1892.....	1,728
Apple trees, growing.....	74	Land surface, acres, 1892.....	476,387.76
Maple syrup, gallons, 1892.....	51	Water surface, acres, 1892.....	4,277.12
Butter, pounds.....	54,120	Number of farms, 1892.....	208
Cheese, pounds.....	120		

## FARM STOCK, 1892.

Number of milch cows.....	2,565
Number of horses, all ages.....	4,000
Number of cattle, all ages, including milch cows.....	5,207
Number of sheep.....	2,305
Number of hogs.....	917
Personal property.....	\$448,294

## WINONA COUNTY.

(Population, 1890, 33,797; County seat, Winona.)

## AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	23,029	Bushels..... 362,064	15.70	21,321
Oats.....	28,914	"..... 985,171	34.10	30,656
Corn.....	20,440	"..... 633,207	31.00	19,156
Barley.....	38,741	"..... 1,148,432	29.60	47,950
Rye.....	1,954	"..... 32,654	16.70	2,920
Buckwheat.....	619	"..... 7,647	12.40	671
Potatoes.....	1,804	"..... 186,155	.....	1,885
Beans.....	16	"..... 322	.....	24
Sugar cane.....	13	Syrup, gal's..... 693	.....	4
Cultivated hay.....	25,585	Tons..... 33,932	.....	26,073
Flax seed.....	3,804	Bushels..... 59,808	15.70	2,630
Other products.....	7,141	.....	.....	5,572
Total acres cultivated.....	152,060	.....	.....	158,862
Acres increase in 1892.....	6,802	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	1,721	Honey, pounds.....	16,769
Timothy seed, bushels.....	17,350	Butter, pounds.....	636,515
Clover seed, bushels.....	226	Cheese, pounds.....	400
Apple trees, growing.....	25,523	Wool, pounds, fall '91.....	6,416
Apple trees, bearing.....	10,342	Wool, pounds, spring '92.....	19,920
Apples, bushels.....	14,220	Land surface, acres, 1892.....	406,325.09
Grape vines, bearing.....	3,413	Water surface, acres, 1892.....	2,584.81
Grapes, pounds.....	14,506	Number of creameries, 1892.....	4
Tobacco, pounds.....	500	Number of farms, 1892.....	1,878
Bees, number of hives.....	1,426		

FARM STOCK, 1892.

Number of milch cows.....	9,685
Number of horses, all ages.....	8,196
Number of cattle, all ages, including milch cows.....	19,609
Number of sheep.....	3,969
Number of hogs.....	7,687
Personal property.....	\$3,088,947

WRIGHT COUNTY.

(Population, 1890, 24,164; County seat, Buffalo.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	36,969	Bushels ..... 834,651	22.50	42,166
Oats.....	7,924	" ..... 317,808	40.10	8,167
Corn.....	9,474	" ..... 304,112	32.10	10,177
Barley.....	178	" ..... 5,541	31.10	224
Rye.....	943	" ..... 16,256	17.20	1,519
Buckwheat.....	45	" ..... 614	13.60	22
Potatoes.....	993	" ..... 123,175	.....	888
Beans.....	30	" ..... 304	.....	23
Sugar cane.....	87	Syrup, gal'ns ..... 8,890	.....	73
Cultivated hay.....	2,936	Tons..... 3,742	.....	2,705
Flax seed.....	63	Bushels..... 797	12.70	50
Other products.....	281	.....	.....	347
Total acres cultivated.....	59,923	.....	.....	66,361
Acres increase in 1892.....	6,438	.....	.....	.....

MISCELLANEOUS, 1891.

Wild hay, tons.....	18,884	Honey, pounds.....	15,515
Timothy seed, bushels.....	74	Maple syrup, gallons, 1892.....	1,414
Clover seed, bushels.....	66	Butter, pounds.....	341,276
Apple trees, growing.....	5,120	Cheese, pounds.....	7,335
Apple trees, bearing.....	3,272	Wool, pounds, fall '91.....	13,603
Apples, bushels.....	2,037	Wool, pounds, spring '92.....	27,740
Grape vines, bearing.....	1,925	Land surface, acres, 1892.....	424,353.82
Grapes, pounds.....	8,932	Water surface, acres, 1892.....	32,585.50
Tobacco, pounds.....	427	Number of farms, 1892.....	1,937
Bees, number of hives.....	544	.....	.....

FARM STOCK, 1892.

Number of milch cows.....	11,107
Number of horses, all ages.....	9,885
Number of cattle, all ages, including milch cows.....	19,423
Number of sheep.....	9,828
Number of hogs.....	6,414
Personal property.....	\$1,442,761

YELLOW MEDICINE COUNTY.

(Population, 1890, 9,854; County seat, Granite Falls.)

AGRICULTURE.

Product.	Acres, 1891.	Yield, 1891.	Yield per acre.	Acres, 1892.
Wheat.....	73,484	Bushels ..... 1,585,007	21.60	89,873
Oats.....	14,507	" ..... 543,970	37.50	17,335
Corn.....	7,241	" ..... 123,794	17.10	6,995
Barley.....	1,033	" ..... 30,545	29.60	1,921
Rye.....	42	" ..... 2,053	48.90	11
Buckwheat.....	1	" ..... 12	12.00	1
Potatoes.....	414	" ..... 32,750	.....	490
Beans.....	5	" ..... 54	.....	3
Sugar cane.....	1	Syrup, gal'ns ..... 150	.....	.....
Cultivated hay.....	460	Tons..... 910	.....	603
Flax seed.....	6,734	Bushels..... 65,814	9.80	1,561
Other products.....	145	.....	.....	155
Total acres cultivated.....	104,067	.....	.....	118,948
Acres increase in 1892.....	14,881	.....	.....	.....

## MISCELLANEOUS, 1891.

Wild hay, tons.....	35,045	Bees, number of hives.....	132
Timothy seed, bushels.....	283	Honey, pounds.....	2,325
Clover seed, bushels.....	1	Butter, pounds.....	273,177
Apple trees, growing.....	1,930	Cheese, pounds.....	245
Apple trees, bearing.....	424	Wool, pounds, fall '91.....	9,509
Apples, bushels.....	218	Wool, pounds, spring '92.....	16,658
Grape vines, bearing.....	37	Land surface, acres, 1892.....	481,664.26
Grapes, pounds.....	50	Water surface, acres, 1892.....	6,734.01
Tobacco, pounds.....	10	Number of farms, 1892.....	907

## FARM STOCK, 1892.

Number of milch cows.....	7,044
Number of horses, all ages.....	7,806
Number of cattle, all ages, including milch cows.....	14,320
Number of sheep.....	5,714
Number of hogs.....	2,781
Personal property.....	\$995,606



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CHAPTER III.

MISCELLANEOUS STATISTICS.

COMPILED FROM OFFICIAL REPORTS AND OTHER SOURCES,  
FOR 1892.

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# STATEMENT I.

## COUNTIES IN MINNESOTA.

*List of Counties, with Date of their Creation, and County Seat.*

COUNTIES.	COUNTY SEAT.	DATE.
Aitkin.....	Aitkin.....	May 23, 1857.
Anoka.....	Anoka.....	May 23, 1857.
Becker.....	Detroit.....	March 18, 1858.
*Beltrami.....		February 28, 1866.
Benton.....	Sauk Rapids.....	October 27, 1849.
Big Stone.....	Ortonville.....	February 20, 1862.
Blue Earth.....	Mankato.....	March 5, 1853.
Brown.....	New Ulm.....	February 20, 1855.
Carlton.....	Carlton.....	May 23, 1857.
Carver.....	Chaska.....	February 20, 1855.
*Cass.....		September 1, 1851.
Chippewa.....	Montevideo.....	February 20, 1862.
Chicago.....	Center City.....	September 1, 1851.
Clay.....	Moorhead.....	March 2, 1852.
Cook.....	Grand Marais.....	March 9, 1874.
Cottonwood.....	Windom.....	May 23, 1857.
Crow Wing.....	Brainerd.....	May 23, 1857.
Dakota.....	Hastings.....	October 27, 1849.
Dodge.....	Mantorville.....	February 20, 1855.
Douglas.....	Alexandria.....	March 8, 1858.
Faribault.....	Blue Earth City.....	February 20, 1855.
Fillmore.....	Preston.....	March 5, 1853.
Freeborn.....	Albert Lea.....	February 20, 1855.
Goodhue.....	Red Wing.....	March 5, 1853.
Grant.....	Elbow Lake.....	March 6, 1868.
Hennepin.....	Minneapolis.....	March 6, 1852.
Houston.....	Caledonia.....	February 23, 1854.
Hubbard.....	Park Rapids.....	February 26, 1883.
Isanti.....	Cambridge.....	February 13, 1857.
Itasca.....	Grand Rapids.....	October 29, 1849.
Jackson.....	Jackson.....	May 23, 1857.
Kanabec.....	Mora.....	March 13, 1858.
Kandiyohi.....	Willmar.....	March 20, 1858.
Kittson.....	Hallock.....	February 25, 1879.
Lac qui Parle.....	Madison.....	November 3, 1871.
Lake.....	Two Harbors.....	March 1, 1856.
Le Sueur.....	Le Sueur Center.....	March 5, 1853.
Lincoln.....	Lake Benton.....	March 6, 1873.
Lyon.....	Marshall.....	November 2, 1869.
McLeod.....	Glencoe.....	March 1, 1856.
Martin.....	Fairmont.....	May 23, 1857.
Marshall.....	Warren.....	February 25, 1879.
Meeker.....	Litchfield.....	February 23, 1856.
Mille Lacs.....	Princeton.....	May 23, 1857.
Morrison.....	Little Falls.....	February 25, 1858.
Mower.....	Austin.....	February 20, 1855.
Murray.....	Slayton.....	May 23, 1857.
Nicollet.....	St. Peter.....	March 5, 1853.
Nobles.....	Worthington.....	May 23, 1857.
Norman.....	Ada.....	November 29, 1881.
Olmsted.....	Rochester.....	February 20, 1855.
Otter Tail.....	Fergus Falls.....	March 18, 1858.
Pine.....	Pine City.....	March 31, 1856.
Pipestone.....	Pipestone City.....	May 23, 1857.
Polk.....	Crookston.....	July 20, 1858.
Pope.....	Glenwood.....	February 20, 1862.
Ramsey.....	St. Paul.....	October 27, 1849.
Redwood.....	Redwood Falls.....	February 6, 1862.
Renville.....	Beaver Falls.....	February 20, 1855.

\*Unorganized.



## COUNTIES—Continued.

COUNTIES.	COUNTY SEAT.	DATE.
Rice.....	Faribault.....	March 5, 1853.
Rock.....	Luverne.....	March 23, 1857.
St. Louis.....	Duluth.....	March 1, 1856.
Scott.....	Shakopee.....	March 5, 1858.
Sherburne.....	Elk River.....	February 25, 1856.
Sibley.....	Henderson.....	March 5, 1853.
Stearns.....	St. Cloud.....	February 20, 1855.
Steele.....	Owatonna.....	February 20, 1855.
Stevens.....	Morris.....	February 20, 1860.
Swift.....	Benson.....	March 4, 1870.
Todd.....	Long Prairie.....	February 20, 1862.
Traverse.....	Wheaton.....	February 20, 1862.
Wabasha.....	Wabasha.....	October 27, 1849.
Wadena.....	Wadena.....	July 11, 1858.
Waseca.....	Waseca.....	February 27, 1857.
Washington.....	Stillwater.....	October 27, 1849.
Watonwan.....	St. James.....	November 6, 1860.
Wilkin.....	Breckenridge.....	March 6, 1868.
Winona.....	Winona.....	February 23, 1849.
Wright.....	Buffalo.....	February 20, 1855.
Yellow Medicine.....	Granite Falls.....	March 6, 1871.

## STATEMENT II.

*Area of the Counties of Minnesota in Square Miles and Acres.*

COUNTIES.	LAND.		WATER.		TOTAL.	
	Square miles.	Acres.	Square miles.	Acres.	Square miles.	Acres.
Aitkin.....	1,821.39	1,165,691.90	173.58	111,090.48	1,994.97	1,276,782.38
Anoka.....	424.88	271,925.66	20.10	12,860.82	444.98	284,786.48
Becker.....	1,307.97	1,836,687.09	137.62	88,073.66	1,445.41	925,060.75
Beltrami.....	4,969.44	3,180,445.27	1,037.68	664,109.46	6,007.12	3,844,554.73
Benton.....	402.81	257,798.90	3.55	2,275.41	406.36	260,074.31
Big Stone.....	494.53	316,497.42	41.78	26,737.33	536.31	343,234.75
Blue Earth.....	734.09	475,582.34	33.79	21,619.39	776.88	497,201.73
Brown.....	605.91	387,733.30	10.84	6,937.52	616.75	394,730.82
Carlton.....	857.72	548,942.09	9.47	6,057.91	867.19	555,000.00
Carver.....	354.15	226,652.28	22.35	14,307.30	376.50	240,959.58
Cass.....	2,667.78	1,707,382.00	629.76	403,041.25	3,297.54	2,110,623.25
Chippewa.....	578.54	370,269.93	15.67	10,027.23	594.21	380,297.16
Chisago.....	421.02	269,451.12	30.64	19,611.38	451.66	289,062.50
Clay.....	1,003.92	668,124.66	23.41	14,984.16	1,067.37	683,108.82
Cook.....	1,406.84	900,378.49	273.56	175,076.51	1,680.40	1,075,455.00
Cottonwood.....	636.87	407,594.35	13.52	8,655.65	650.38	416,250.00
Crow Wing.....	824.04	527,387.51	127.46	81,570.49	951.50	608,958.00
Dakota.....	605.87	387,753.96	5.45	3,488.61	611.32	391,242.57
Dodge.....	437.43	279,956.47	1.22	782.43	438.65	280,738.90
Douglas.....	626.58	401,014.74	96.08	61,485.88	722.66	462,500.62
Faribault.....	709.43	454,053.32	14.29	9,151.21	723.72	463,184.53
Fillmore.....	864.22	553,101.90	2.99	1,912.54	867.21	555,014.44
Freeborn.....	701.94	449,212.53	20.74	13,271.87	722.68	462,514.40
Goodhue.....	764.58	489,329.56	20.21	12,946.06	784.79	502,265.62
Grant.....	544.15	384,256.21	34.13	11,843.03	578.28	370,099.24
Hennepin.....	551.44	352,918.67	70.03	44,821.20	621.47	397,739.88
Houston.....	568.75	363,998.07	11.10	7,104.17	579.85	371,102.24
Hubbard.....	522.83	334,622.87	62.57	40,045.25	585.40	374,657.12
Isanti.....	416.61	266,629.79	41.24	26,395.86	457.81	383,025.65
Itasca.....	5,672.57	3,624,044.12	116.31	138,438.89	5,879.88	3,852,383.01
Jackson.....	696.98	446,066.45	25.68	16,434.75	722.66	462,501.20
Kanabec.....	527.40	337,535.89	14.59	9,336.41	541.90	346,872.30
Kandiyohi.....	776.72	497,101.35	90.42	57,867.89	867.14	54,987.04
Kittson.....	2,148.80	1,375,233.27	15.95	10,260.73	2,164.75	1,385,440.00
Lac qui Parle.....	770.02	492,609.93	1.91	1,237.57	771.93	494,037.40
Lake.....	2,076.42	1,328,904.43	322.52	206,420.00	2,398.94	1,535,325.43
Le Sueur.....	444.52	284,496.41	27.96	17,891.77	472.48	302,388.18
Lincoln.....	522.43	334,355.00	19.56	12,517.30	541.69	346,872.30
Lyon.....	709.50	454,072.72	11.16	7,150.08	720.66	461,222.80

STATEMENT II.—*Concluded.**Area of the Counties of Minnesota in Square Miles and Acres.*

COUNTIES.	Land.		Water.		Total.	
	Square miles.	Acres.	Square miles.	Acres.	Square miles.	Acres.
McLeod.....	485.14	310,488.63	22.31	14,283.23	507.45	324,771.86
Marshall.....	1,673.64	1,071,129.11	1.40	895.01	1,675.04	1,072,024.12
Martin.....	704.73	451,021.05	19.16	12,667.35	723.88	463,288.40
Meeker.....	596.00	381,443.02	37.62	24,075.56	633.62	405,518.58
Mille Lacs.....	571.09	365,497.65	117.10	74,945.53	688.19	440,443.18
Morrison.....	1,083.52	693,454.07	5.57	3,564.78	1,089.09	697,018.85
Mower.....	709.07	553,803.10	2.11	1,352.65	711.18	655,155.75
Murray.....	695.14	444,891.27	26.42	16,909.93	721.56	461,801.20
Nicollet.....	495.75	273,782.41	28.86	18,469.37	464.61	297,351.78
Nobles.....	710.75	454,877.12	16.91	10,827.04	727.66	465,704.16
Norman.....	1,435.11	918,472.60	23.21	14,833.55	1,458.32	933,326.15
Olmsted.....	658.42	421,391.08	3.94	2,520.20	662.36	423,911.24
Otter Tail.....	1,995.90	1,270,977.77	254.30	162,748.67	2,240.20	1,433,726.44
Pine.....	1,419.74	908,632.83	24.76	15,845.68	1,444.50	924,477.58
Pipestone.....	462.32	295,881.75	.95	611.76	463.27	296,493.51
Polk.....	3,117.37	1,995,054.58	41.91	26,818.67	3,159.18	2,021,873.25
Pope.....	667.61	427,269.27	55.08	35,251.93	722.69	462,521.20
Ramsey.....	173.70	111,168.71	13.45	8,605.34	187.15	119,774.05
Redwood.....	870.50	557,122.74	23.33	14,930.13	893.83	572,052.87
Renville.....	971.33	621,650.89	9.88	6,385.69	981.31	628,036.58
Rice.....	486.83	311,505.87	17.27	11,054.83	504.00	322,560.70
Rock.....	480.83	307,736.11	1.84	1,174.04	482.67	308,910.15
St. Louis.....	5,837.26	3,735,846.26	774.49	495,674.68	6,611.75	4,230,520.94
Scott.....	342.73	219,344.22	15.87	10,157.58	358.60	229,501.80
Sherburne.....	448.72	287,180.40	20.16	12,905.72	468.88	300,086.12
Sibley.....	566.89	362,808.14	30.84	19,737.61	597.73	382,545.75
Stearns.....	1,272.22	814,220.09	57.85	37,021.27	1,330.07	851,241.39
Steele.....	426.19	272,761.47	4.40	2,817.69	430.59	275,579.16
Stevens.....	555.21	355,336.19	16.27	10,411.81	571.48	365,748.00
Swift.....	743.05	475,553.36	14.68	9,392.08	757.73	484,945.45
Todd.....	965.98	618,225.14	42.36	27,111.58	1,008.34	645,236.72
Traverse.....	567.91	363,463.46	13.92	8,906.00	581.83	372,369.46
Wabasha.....	555.54	355,514.17	39.09	25,018.07	594.63	380,562.24
Wadena.....	707.43	452,751.16	15.35	6,828.84	722.78	462,580.00
Waseca.....	419.00	268,161.75	18.01	11,524.16	437.01	579,685.91
Washington.....	408.87	261,675.02	21.14	13,530.33	430.01	275,205.35
Watonwan.....	432.89	277,051.92	2.56	1,638.00	635.45	278,689.92
Wilkin.....	744.35	476,387.76	6.69	4,277.12	751.04	480,664.88
Winona.....	634.88	406,325.09	4.04	2,584.81	638.92	408,909.90
Wright.....	633.05	424,353.82	50.92	32,585.50	713.97	456,939.30
Yellow Medicine.....	752.60	481,664.26	10.52	6,734.01	763.12	488,398.27
Totals.....	78,649.00	50,335,367.19	5,637.53	3,608,012.05	84,286.53	53,943,378.24

(L. R. No. 3, 1893.)

## STATEMENT III.

## U. S. DEPARTMENT OF AGRICULTURE.

## WEATHER BUREAU.

Office of the Local Forecast Official, }  
 St. Paul, Minn., January 5, 1893. }

*Hon. H. Stockenstrom, Commissioner of Statistics of the State of Minnesota.*

SIR: Your request, made in letter of the 3rd inst., is respectfully complied with. Enclosed please find meteorological report for this vicinity for the year 1892.

Very respectfully,

P. F. LYONS,  
 Forecast Official for Minnesota.

## WEATHER REVIEW FOR THE YEAR 1892.

U. S. DEPARTMENT OF AGRICULTURE, }  
 WEATHER BUREAU, }  
 ST. PAUL, MINN., Jan. 1, 1893. }

Latitude 44° 58'. Longitude west from Greenwich 93° 05'.  
 Longitude west from Washington 16° 05'.

A review of the weather for St. Paul and vicinity for the year 1892, shows a mean barometer corrected for elevation, of 30.07 inches; mean temperature of 42.4 degrees; total precipitation (rains and melted snow) of 32.55 inches; mean cloudiness on a scale of 0 to 10, "0" representing an entirely cloudless sky and "10" an entirely cloudy one of 5.6; mean relative humidity of 72.3 per cent.; total wind movement, 63,531 miles; highest wind velocity and direction, 44 miles, from the northwest. The winter months were warmer than average, but the deficiency in temperature during the spring and summer seasons made the annual mean nearly one degree below normal. The excessive rainfall of the summer season caused an excess of 4.73 inches for the year. The last killing frost of the spring season occurred May 20th, and the first of the fall season was noted October 19. Eight frosts occurred in October prior to the 19th, but there was an interval of five months that the thermal conditions were not adverse to vegetation. All the staple crops had matured long before Oct. 19th. The maximum temperature of the year was 90 degrees, registered June 11 and 12, and July 23; the minimum was 25 degrees below zero, registered January 19. The temperature went to 90 degrees and a small fraction above it on two days, and it went below 32 degrees or "freezing point" on 159 days. There were 87 days during which the temperature remained below 32 degrees at all times, both day and night. The year had 96 clear, 149 fair, and 121 cloudy days, and 106 on which .01 of an inch or more of rain or melted snow fell. There were 31 electrical disturbances of the nature of thunder storms, April and May had two each; June and July, eight each; August had seven, September, three and October one. More meridian manifestations of that force were seen in the seven auroral or polar light displays, of which three were observed in July and also in September, and one in October. There were only two hail storms during the year. All that is of additional importance is given in detail, in the following tables.

P. F. LYONS,  
 Forecast Official Observer.

TABLE NO. 1.

## BAROMETER AND TEMPERATURE, ST. PAUL, 1892.

MONTH.	Mean Barom- eter cor- rected to sea-lev'l	TEMPERATURE.				
		Mean.	Highest.	Date.	Lowest.	Date.
January.....	30.19	10 0	44	30	-25	19
February.....	30.17	20.8	42	26	-18	15
March.....	30.14	27.9	56	25	-2	16
April.....	30.04	42.2	65	1	17	9
May.....	29.93	50.8	72	17 & 24	30	20
June.....	29.92	65.2	90	11 & 12	43	2
July.....	30.02	71.3	90	23	51	3
August.....	30.01	69.4	87	16	44	31
September.....	30.03	62.6	86	23	42	16
October.....	30.05	51.2	83	2	24	25
November.....	30.11	27.4	52	5	1	23
December.....	30.38	9.6	41	2	-17	26
Annual means.....	30.07	42.4	.....	.....	.....	.....

NOTE: A dash (—) or minus sign, when used in connection with temperature figures, means below zero.



TABLE No. 2.  
*Cloudiness, Precipitation, Etc.*

YEAR 1892.  MONTH.	DAYS.			Mean cloudiness on a scale of 0 to 10, "0" entirely clear; "10" entirely cloudy.	No. of days without an inch or more of rain or melted snow.	Total precipitation in inches and hundredths.	Mean relative humidity.	Mississippi river stages of water in feet and tenths.			
	Cloudi-ness.	Partly cloudy.	Cloudy.					Highest.	Date.	Lowest.	Date.
January.....	14	12	5	3.5	1	.02	77	Frozen	11	.....	.....
February.....	7	6	16	6.8	10	1.44	89	.....	.....	2.0	26
March.....	13	7	11	5.1	8	.75	83	5.0	11-12-13	3.1	25
April.....	4	13	13	6.7	7	.97	63	5.7	3-4	4.1	1
May.....	0	14	17	7.7	21	5.17	68	12.6	26	8.6	15-30
June.....	3	16	11	6.6	15	7.50	71	11.5	1	4.5	17-18
July.....	7	20	4	4.9	11	9.04	70	8.4	1	3.3	29
August.....	10	12	9	4.9	8	3.66	72	6.4	1	2.9	28
September.....	13	10	7	4.3	5	1.72	74	4.1	14	2.2	29
October.....	15	12	4	4.0	6	1.39	68	3.1	6	2.2	29-30-31
November.....	4	13	13	6.8	6	.36	71	2.1	1-2	1.0	24
December.....	6	14	11	6.1	8	.53	72	Frozen	.....	.....	.....
Sums.....	96	149	121	67.4	106	32.55	878	.....	.....	.....	.....
Means.....	.....	.....	.....	5.6	.....	2.71	73.2	.....	.....	.....	.....

TABLE No. 3.

*Wind Data.*

MONTH.	Total wind movement in miles.	WIND DIRECTION. NUMBER OF TIMES OBSERVED BLOWING FROM THE									Highest Velocity.	Direction.	Date.
		N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm.			
January.....	4,949	0	0	1	8	4	13	20	5	11	28	N.W.	29
February.....	5,354	5	5	6	17	1	5	12	6	1	24	S.	13
March.....	4,545	1	4	7	16	3	1	5	18	7	38	W.	10
April.....	7,381	1	12	7	9	4	9	9	7	2	40	S. W.	28
May.....	6,580	7	13	5	9	2	5	6	15	0	36	N.W.	19
June.....	4,964	3	7	8	11	4	9	8	9	1	30	N.W.	19
July.....	4,360	2	4	4	26	5	4	5	11	1	25	S. E.	24
August.....	4,167	2	5	2	24	2	3	8	10	6	42	N.W.	8
September.....	5,094	2	5	4	23	6	3	11	3	3	24	N.W.	25
October.....	4,963	1	3	7	14	2	11	9	11	4	44	N.W.	28
November.....	6,184	1	6	2	21	1	6	14	9	0	35	W.	20
December.....	4,990	0	2	4	16	5	5	13	17	0	24	N.W.	7
Sums.....	63,531	25	66	57	194	39	74	120	121	36			

NOTE. The wind direction is determined from the daily 7 a. m. and 7 p. m. 90th meridian time observations.

P. F. LYONS,

Forecast Official Observer.

## STATEMENT IV.

## REPORTS FROM THE SURVEYORS GENERAL OF LOGS AND LUMBER.

*Hon. H. Stockenstrom, Commissioner of Statistics, St. Paul, Minn.:*

DEAR SIR: I herewith respectfully submit my annual report for year 1892, as follows:

	SCALED.		SAWED.	MANUFACTURED.			
	Logs.	Feet.	Feet, logs.	Feet, Lumber.	Shingles.	Lath.	Pickets.
Stillwater.....	3,250,693	425,000,000	100,000,000	100,960,000	49,300,000	28,900,000	7,500,000
South Stillwater.....			39,768,000	43,000,000	14,000,000	16,000,000	1,000,000
Lakeland.....			10,412,000	11,600,000	4,214,000	4,500,000	500,000
Afton.....			7,000,000	7,500,000	2,000,000	1,300,000	250,000
Hudson.....			11,965,000	12,000,000	3,000,000	1,500,000	300,000
Prescott.....			2,395,000	2,560,000	500,000	700,000	200,000
Point Douglas.....			975,000	1,000,000	100,000	100,000	25,000
Total.....	3,250,693	425,000,000	172,515,000	178,560,000	73,114,000	53,000,000	9,775,000

JACOB BEAN, Surveyor General, 1st District.  
By F. B. YATES, Deputy.

MINNEAPOLIS, MINN., Dec. 31, 1892.

*Hon. H. Stockenstrom, Commissioner of Statistics, St. Paul, Minn.:*

DEAR SIR: I have the honor to report the following amount of logs that I have scaled, also the estimated amount of logs sawed, the amount of lumber, lath, shingles and pickets manufactured at the places named and the amount of logs carried over for the year 1892 in the Second District of Minnesota.

	SCALED.		SAWED.	MANUFACTURED.				CARRIED OVER.
	Logs.	Feet.	Feet logs.	Feet lumber.	Shingles.	Lath.	Pick-ets.	Feet logs.
Minneapolis.	3,493,381	403,088,040	402,963,040	494,890,250	221,610,590	112,840,470	.....	30,000,000
Above M'p'ls								185,000,000
St. Paul.....	104,987	17,237,700						
Hastings.....			11,000,000	12,500,000	2,000,000	1,500,000	.....	200,000
St. Cloud ...	156,192	15,505,300	15,565,840	20,354,080	8,791,000	4,406,950	.....	
Sauk Rapids	43,866	5,078,240	5,140,100	5,150,100	2,734,000	1,900,000	1,300	1,500,000
Anoka.....	9,870	1,058,570	10,149,500	12,067,204	2,907,000	3,424,700	.....	
Elk River....	29,779	5,606,400	5,606,400	6,250,560	3,826,750	948,000	.....	
Monticello.....			1,000,000	1,500,000	.....	.....	.....	
Little Falls.	152,769	26,955,330	26,824,570	*31,000,000	.....	.....	.....	
Brainerd....			13,122,230	12,996,406	10,724,500	2,944,050	1,100	1,000,000
Aitkin.....			1,000,000	1,200,000	.....	.....	.....	
Frazee City.....			1,461,218	1,394,000	1,097,000	300,000	.....	
Milaca.....			*8,500,000	9,500,000	.....	.....	.....	
Gravelville.....			200,000	220,000	.....	.....	.....	
Motley.....			1,375,000	1,489,000	865,250	428,000	.....	
Royalton.....			*1,500,000	2,000,000	.....	.....	.....	
Total .....	3,990,844	474,529,580	505,407,898	612,511,600	254,556,090	128,690,170	2,400	217,700,000

\* Estimated.

S. S. BROWN, Surveyor General,  
Second District, Minnesota.  
By SINCLAIR, Deputy.

OFFICE OF SURVEYOR GENERAL OF LOGS AND LUMBER, }  
FOURTH MINNESOTA DISTRICT, }  
WABASHA, MINN., January 10, 1893. }

*Hon. H. Stockenstrom, Commissioner of Statistics, St. Paul, Minn.*

DEAR SIR—I have the honor to submit herewith the amount logs scaled under my supervision for the year 1892. Minneiska, 1,712,845 logs; 231,589,950 feet.

S. WHITMORE,  
Surveyor General Fourth Minnesota Dist.



OFFICE OF SURVEYOR GENERAL FIFTH DISTRICT OF MINNESOTA,  
DULUTH, Dec. 30, 1892. }

*Hon. H. Stockenström, Commissioner of Statistics, St. Paul, Minn.*

DEAR SIR:—Below please find report of logs cut and manufactured in this district for the year 1892:

DULUTH AND VICINITY.	No. logs.	Amt. Feet.	Lumber.	Lath.	Shingles.	Carried over.	Estim. cut, 1892-3.
Duluth and vicinity .....	1,325,736	165,717,600	152,605,000	28,093,000	31,294,000	19,260,000	142,500,000
Little and Big Fork .....	16,000	2,500,000	.....	.....	.....	.....	10,000,000
Eastern Minn. R. R. ....	18,609	1,657,730	1,600,000	.....	.....	.....	1,500,000
Iron Range R. R. ....	79,128	9,891,000	11,000,000	3,000,000	6,500,000	.....	30,000,000
Cloquet .....	904,000	113,110,000	118,000,000	18,306,000	62,695,000	23,000,000	100,000,000
Northern Pacific Junction .....	104,000	13,000,000	13,000,000	2,000,000	2,000,000	.....	13,000,000
Total .....	2,619,553	327,275,730	319,845,000	53,544,000	108,384,000	42,760,000	327,000,000

GEO. F. ASH,

Surveyor General Logs and Lumber, Fifth District, Minn.

ALBERT KAISER, Surveyor General.

WM. A. LANCTOT, Deputy.

OFFICE OF SURVEYOR GENERAL OF LOGS AND LUMBER, }  
SEVENTH DISTRICT, OF MINNESOTA. }  
CROOKSTON, MINN., January 9, 1893. }

*Hon. H. Stockenstrom, St. Paul, Minn.*

DEAR SIR:—As per your request herewith hand you figures of logs cut in this district during season of 1891-1892. No. of logs, 37,267; feet, 4,095,774. Estimates cut for 1892, 1893, unknown. I would say, relative to above, that it is only what logs were cut in government or school lands. The main cut of last season was not reported to this office at all, consequently can not give you the figures. The contractors agreeing on a scaler, thus saving themselves the expense of official scale.

Respectfully,

ALBERT KAISER,  
Surveyor General.

# STATEMENT V.

## REPORTS FROM THE LAND DEPARTMENTS OF THE RAIL-ROAD COMPANIES.

ST. PAUL & DULUTH RAILROAD, }  
LAND DEPARTMENT, }  
ST. PAUL, MINN., January 13, 1893. }

*Hon. H. Stockenstrom, Commissioner Statistics, St. Paul, Minn.:*

DEAR SIR—In compliance with the request contained in your favor of January 5, 1893, I herewith enclose a statement of the lands acquired and sold by this company during the year ending December 31, 1892, and also showing lands remaining unsold January 1, 1893.

Yours truly,

HOPEWELL CLARKE,  
Land Commissioner.

Acres on hand December 31, 1891.....	1,107,831.16
Add cancellations of land contracts during the year 1891....	488.48
Total.....	1,108,329.64
Less sales made during the year ending December 31, 1892..	11,851.83
Acres on hand December 31, 1892.....	1,096,467.81
Situat in the following counties:	
Aitkin.....	172,662.21
Anoka.....	1,166.19
Benton.....	4,319.53
Carlton.....	149,391.26
Chisago.....	5,429.89
Cook.....	8,938.02
Crow Wing.....	30,365.91
Isanti.....	11,305.82
Itasca.....	9,016.37
Kanabec.....	103,850.65
Lake.....	8,688.99
Mille Lacs.....	47,373.91
Morrison.....	34,544.17
Pine.....	350,500.37
Sherburne.....	2,766.01
St. Louis.....	154,988.51
Washington.....	1,160.00
Total.....	1,096,467.81

MIN. CENT., HASTINGS & DAKOTA, AND ST. PAUL & CHICAGO RYS., }  
 LAND DEPARTMENT,  
 ST. PAUL, MINN., January 7, 1893. }

*Hon. H. Stockenstrom, Commissioner of Statistics, St. Paul, Minn.*

DEAR SIR—Replying to yours of the 5th inst, I herewith submit reports of the three land departments in my charge:

HASTINGS AND DAKOTA LAND DEPARTMENT.

Acres on hand December 31, 1891.....	51,340
Acres on hand December 31, 1892.....	24,796
Acres sold during 1892.....	26,544

MINNESOTA CENTRAL LAND DEPARTMENT.

Acres on hand December 31, 1891.....	4,400
Acres on hand December 31, 1892.....	3,504
Acres sold during 1892.....	896

ST. PAUL & CHICAGO LAND DEPARTMENT.

Acres on hand December 31, 1891.....	79,902
Acres on hand December 31, 1892.....	72,443
Acres sold during 1892.....	7,459

Respectfully yours, GEO. E. SKINNER,  
 Land Commissioner.

WISCONSIN, MINNESOTA & PACIFIC RAILWAY, }  
 MINNEAPOLIS, MINN., Jan. 17, 1893. }

*Hon. H. Stockenstrom, Commissioner of Statistics, St. Paul, Minn.*

DEAR SIR—Replying to yours of the 5th inst, I hand you the following report of this company's lands:

Acres deeded from State prior to Dec. 31, 1891..	160,966.89
Acres sold prior to December 31, 1891.....	36,731.79

Acres on hand December 31, 1891.....	124,235.10
Contracts cancelled during 1892.....	160.97
Deeds from State during 1892.....	.28

Acres sold during 1892.....	127,667.35
Acres sold during 1892.....	4,671.13

Acres on hand December 31, 1892.....	122,996.22
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Yours truly, L. B. ARNOLD, Secretary

ST. PAUL & NORTHERN PACIFIC RAILWAY CO., }  
 LAND DEPARTMENT,  
 ST. PAUL, MINN., January 26, 1893. }

*Hon. H. S. Stockenstrom, Commissioner of Statistics, St. Paul, Minn.*

DEAR SIR;—In compliance with your request of January 5th, I beg leave to report that the Land Grant of the St. Paul and Northern Pacific Railway company (formerly the Western Railway Company of Minnesota) is not yet adjusted. The Grant embraces ten sections per mile, from Watab to Brainerd, a distance of 53 and  $\frac{3}{10}$  miles, making 533 sections, or 341,120 acres. The adjusted selection lists cover only 277,977.21 acres.

The sales made from the lands embraced within the limits of the Grant to December 31, 1892, aggregate 103,590.12 acres, of which the number of acres sold during the year 1892 was 5,602.72.

Yours truly, A. G. POSTLETHWAITE,  
 Land Commissioner.



STATEMENT VI.

REPORTS FROM UNITED STATES LAND OFFICES.

UNITED STATES LAND OFFICE, }  
DULUTH, MINN., January 6th, 1893. }

DEAR SIR:—Complying with your request of the 5th of Jan. 1893, I have the honor to report the business of this office for the year 1892, as follows:

	No.	Acres.
Sales of public lands.....	414	39,619.29
Homestead entries.....	1,940	241,115.95
Pre-emption fillings.....	15	2,250
Soldiers' and Sailors' declaratory statements.....	18	2,160
Final homestead entries.....	42	5,249.30
Military Bounty Land Warrants.....	6	860
Valentine Scrip.....	1	40
Agricultural College Scrip.....	1	160
Timber and Stone entries.....	223	26,760
Totals.....	2,660	318,214.54

Very respectfully,

MONROE NICHOLS, Register.

HON. H. STOCKENSTROM,  
Commissioner of Statistics, St. Paul, Minn.

UNITED STATES LAND OFFICE, }  
CROOKSTON, MINN., January 6th, 1893. }

*Hon. H. Stockenstrom, Commissioner of Statistics, St. Paul, Minn.*

DEAR SIR:—In reply to your letter of the 5th inst., I note the following summary of the business of this office during the year ending December 31st, 1892:

	No.	Acres.
Cash entries.....	122	12,467.11
Homestead entries.....	597	84,579.41
Final homestead entries.....	414	61,441.52
Final timber culture entries.....	39	5,892.53
Totals.....	1,172	164,380.57

Very respectfully,

HUGH THOMPSON, Register.

UNITED STATES LAND OFFICE, }  
TAYLORS FALLS, MINN., January 10, 1893. }

*Hon. H. Stockenstrom, Commissioner of Statistics, St. Paul, Minn.*

DEAR SIR: The following statement shows the number of entries of each class and the number of acres disposed of in this district during the year 1892:

	No.	Acres.
Cash entries.....	20	2,885.15
Homesteads.....	94	10,227.09
Final homesteads.....	57	6,528.55
Total.....	171	19,640.79
Total cash received.....		\$5,022.33

Very respectfully,

ED. C. GOTTRY, Register.  
J. WALFRID, Receiver.

UNITED STATES LAND OFFICE. }  
 ST. CLOUD, MINN., January 10, 1893. }

*Hon. H. Stockenstrom, Commissioner of Statistics, St. Paul, Minn.:*

DEAR SIR: I have the honor to transmit herewith a statement of the number of entries, etc., made at this office during the year ending December 31, 1892, viz.:

	No.	Acres.
Cash entries.....	91	8,734.83
Homestead entries.....	544	63,074.12
Final homestead entries.....	338	42,966.15
Timber culture entries.....	2	320.00
Final timber culture entries.....	29	4,030.36
Pre-emption filings.....	3	480.00
Railroad selections.....	15	2,004.94
Totals.....	1,022	121,610.94

Very respectfully,

A. BARTO, Register.

### STATEMENT VII.

#### FINAL ESTIMATES OF UNITED STATES DEPARTMENT OF AGRICULTURE FOR WHEAT, OATS AND CORN OF 1892.

BY HON. J. R. DODGE, STATISTICIAN.

*Wheat, 1892.*

STATES AND TERRITORIES.	Acres.	Bushels.	Value.
Maine.....	4,500	75,000	\$76,653
New Hampshire.....	2,350	38,000	58,305
Vermont.....	8,750	151,000	144,480
Massachusetts.....			
Rhode Island.....			
Connecticut.....			
New York.....	518,837	8,405,000	7,144,385
New Jersey.....	124,950	1,787,000	1,483,032
Pennsylvania.....	1,324,063	19,331,000	15,658,369
Delaware.....	94,705	1,231,000	923,374
Maryland.....	529,684	6,992,000	5,173,953
Virginia.....	799,069	7,591,000	5,769,279
North Carolina.....	716,942	5,090,000	4,530,356
South Carolina.....	144,316	938,000	872,390
Georgia.....	216,820	1,474,000	1,326,938
Florida.....			
Alabama.....	45,600	306,000	284,134
Mississippi.....	3,650	25,000	22,338
Louisiana.....			
Texas.....	445,085	5,475,000	4,105,910
Arkansas.....	163,058	1,337,000	1,069,661
Tennessee.....	898,915	8,540,000	5,806,991
West Virginia.....	402,077	4,302,000	3,226,668
Kentucky.....	985,977	11,635,000	7,795,134
Ohio.....	2,795,733	38,022,000	25,854,939
Michigan.....	1,622,737	23,854,000	15,982,337
Indiana.....	2,713,292	39,885,000	25,526,651
Illinois.....	1,751,249	28,370,000	17,873,247
Wisconsin.....	766,429	8,814,000	5,464,639
Minnesota.....	3,552,626	41,210,000	25,138,382
Iowa.....	631,063	7,257,000	4,354,335
Missouri.....	1,986,686	24,834,000	14,403,474
Kansas.....	4,070,724	70,831,000	36,831,911
Nebraska.....	1,253,564	15,670,000	7,834,775
South Dakota.....	2,541,848	31,767,000	16,201,094
North Dakota.....	2,868,729	34,098,000	18,199,217
Montana.....	41,761	898,000	619,525
Wyoming.....	5,775	101,000	66,702
Colorado.....	131,082	2,504,000	1,452,126
New Mexico.....	37,331	515,000	412,134
Arizona.....	10,891	170,000	132,522
Utah.....	102,573	1,775,000	1,100,198
Nevada.....	6,101	117,000	87,854
Idaho.....	76,951	1,693,000	1,015,753
Washington.....	523,530	9,005,000	5,222,735
Oregon.....	622,850	9,779,000	6,258,397
California.....	3,012,057	39,157,000	26,626,584
Total.....	38,554,430	515,949,000	322,111,581

*Oats, 1892.*

STATES AND TERRITORIES.	Acres.	Bushels.	Value.
Maine.....	124,501	4,009,000	\$1,804,019
New Hampshire.....	28,223	960,000	422,216
Vermont.....	106,580	3,784,000	1,626,944
Massachusetts.....	15,129	460,000	220,763
Rhode Island.....	4,179	123,000	60,408
Connecticut.....	24,473	619,000	278,625
New York.....	1,383,183	38,729,000	15,104,358
New Jersey.....	119,287	3,066,000	1,256,927
Pennsylvania.....	1,177,146	29,664,000	11,865,632
Delaware.....	22,152	428,000	162,463
Maryland.....	96,272	1,829,000	695,084
Virginia.....	488,539	5,472,000	2,133,938
North Carolina.....	549,717	5,332,000	2,399,515
South Carolina.....	350,679	3,682,000	1,914,708
Georgia.....	569,136	6,090,000	3,166,673
Florida.....	47,222	463,000	254,527
Alabama.....	364,810	3,721,000	1,897,742
Mississippi.....	146,607	1,554,000	777,017
Louisiana.....	34,533	421,000	210,652
Texas.....	619,456	15,177,000	5,767,135
Arkansas.....	317,690	4,988,000	1,995,093
Tennessee.....	553,035	7,466,000	2,837,070
West Virginia.....	164,034	2,871,000	1,176,944
Kentucky.....	596,557	10,917,000	4,039,287
Ohio.....	1,002,421	26,364,000	9,227,285
Michigan.....	968,944	27,809,000	9,733,043
Indiana.....	1,100,932	29,175,000	9,919,397
Illinois.....	2,854,105	75,063,000	23,269,518
Wisconsin.....	1,674,568	50,572,000	14,665,867
Minnesota.....	1,596,090	43,573,000	12,200,512
Iowa.....	3,773,254	95,841,000	24,918,570
Missouri.....	1,204,640	24,093,000	7,227,840
Kansas.....	1,547,175	44,094,000	11,464,567
Nebraska.....	1,615,393	43,131,000	9,920,128
South Dakota.....	702,369	18,472,000	4,248,630
North Dakota.....	472,080	12,510,000	3,502,834
Montana.....	66,323	1,910,000	764,041
Wyoming.....	15,300	438,000	166,280
Colorado.....	98,811	2,836,000	964,198
New Mexico.....	11,104	225,000	126,230
Arizona.....			
Utah.....	27,752	735,000	294,171
Nevada.....			
Idaho.....	24,634	714,000	264,323
Washington.....	92,282	3,184,000	1,114,305
Oregon.....	244,689	6,484,000	2,399,176
California.....	67,829	1,987,000	794,956
Total.....	27,063,835	661,035,000	\$209,253,611



*Corn, 1892.*

STATES AND TERRITORIES.	Acres.	Bushels.	Value.
Maine.....	13,287	472,000	\$316,032
New Hampshire.....	25,327	957,000	622,285
Vermont.....	43,220	1,643,000	1,051,329
Massachusetts.....	40,059	1,550,000	961,175
Rhode Island.....	9,132	305,000	192,156
Connecticut.....	43,997	1,518,000	941,096
New York.....	527,689	17,414,000	10,448,242
New Jersey.....	288,732	9,124,000	5,291,880
Pennsylvania.....	1,299,406	39,632,000	22,590,173
Delaware.....	201,893	3,775,000	1,661,176
Maryland.....	629,361	12,965,000	5,834,177
Virginia.....	1,703,706	26,067,000	13,815,352
North Carolina.....	2,485,010	25,347,000	13,687,435
South Carolina.....	1,591,677	16,713,000	9,526,187
Georgia.....	2,945,708	32,992,000	18,475,481
Florida.....	491,379	4,422,000	2,653,447
Alabama.....	2,513,621	30,666,000	15,946,412
Mississippi.....	1,990,684	27,272,000	13,908,909
Louisiana.....	1,071,568	15,859,000	7,929,603
Texas.....	3,441,211	73,642,000	33,138,862
Arkansas.....	1,962,524	34,344,000	16,141,760
Tennessee.....	3,018,431	61,274,000	26,347,884
West Virginia.....	636,534	14,322,000	8,020,328
Kentucky.....	2,953,020	68,805,000	27,522,146
Ohio.....	2,852,157	83,853,000	35,218,435
Michigan.....	928,719	23,218,000	10,680,269
Indiana.....	3,526,761	103,334,000	41,333,639
Illinois.....	6,310,202	165,327,000	61,171,098
Wisconsin.....	1,001,738	27,347,000	10,392,030
Minnesota.....	896,012	24,192,000	8,951,160
Iowa.....	7,074,930	200,221,000	64,070,566
Missouri.....	5,505,018	152,489,000	54,896,040
Kansas.....	5,952,057	145,825,000	45,205,873
Nebraska.....	5,572,523	157,145,000	44,000,642
South Dakota.....	794,011	17,706,000	5,843,127
North Dakota.....	17,515	375,000	149,928
Montana.....	1,080	21,000	14,364
Wyoming.....	2,050	38,000	23,134
Colorado.....	124,350	2,773,000	1,109,202
New Mexico.....	29,250	585,000	421,200
Arizona.....	4,650	81,000	52,894
Utah.....	8,750	158,000	91,350
Idaho.....	1,550	26,000	17,903
Washington.....	10,250	185,000	110,700
Oregon.....	13,400	288,000	161,336
California.....	72,500	2,197,000	1,208,213
Totals.....	70,626,658	1,628,464,000	\$642,146,630

STATEMENT VIII.

REPORTS FROM UNITED STATES CUSTOM HOUSES.

OFFICE OF THE COLLECTOR OF CUSTOMS, }  
PORT OF ST. PAUL, MINN., }  
January 23, 1893.

*Hon. H. Stockenstrom, Commissioner of Statistics, St. Paul, Minn:*

SIR:—In accordance with your request I have the honor to append the following statement of the business transactions of this office during the calendar year ending December 31, 1892.

Respectfully yours,

C. G. EDWARDS, Collector.

QUARTER.	Value of free goods imported.	Value of dutiable goods imported.	Total value of imports.	Amount of duties collected.
First quarter.....	\$19,872.00	\$265,117.00	\$284,989.00	\$120,520.64
Second quarter.....	20,172.00	173,022.00	193,194.00	85,485.44
Third quarter.....	207,783.00	243,635.00	451,418.00	113,303.17
Fourth quarter.....	73,631.00	220,531.00	294,162.00	104,868.15
Totals.....	\$321,458.00	\$902,305.00	\$1,223,763.00	\$424,177.40

OFFICE OF THE COLLECTOR OF CUSTOMS, }  
PORT OF DULUTH, MINN., }  
January 18, 1893.

*Hon. H. Stockenstrom, Commissioner of Statistics, St. Paul, Minn:*

SIR:—In compliance with your request of the 6th inst., I have the honor to enclose herewith Annual Statement of Commercial Transactions, District of Duluth, for 1892.

Very respectfully,

C. F. JOHNSON, Collector of Customs.

ANNUAL STATEMENT OF COMMERCIAL TRANSACTIONS IN  
THE CUSTOMS DISTRICT OF DULUTH, 1892.

OFFICIAL STATISTICS.

I—ARRIVALS, CLEARANCES AND TONNAGE.

MONTH.	Foreign.		To'nage.	Coastwise.		Tonnage.	Total tonnage.
	Ar'v'ls	Cl'n'cs		Arrivals	Cl'rances.		
January.....	1	1	22	1	1	44	66
April.....	1	3	33,666	70	65	183,686	187,352
May.....	33	31	48,329	249	265	365,360	613,689
June.....	41	37	52,556	209	215	464,614	517,170
July.....	40	34	43,166	253	235	529,633	572,799
August.....	42	41	55,005	211	215	488,357	543,362
September.....	27	24	32,359	208	212	488,897	521,256
October.....	26	21	32,972	191	195	464,411	497,383
November.....	15	15	21,462	137	130	324,049	345,511
December.....	2	5	1,647	9	7	10,417	12,064
Total.....	227	212	291,184	1,508	1,535	3,519,468	8,310,652

Total arrivals and clearances, 3,482.

## II—COMPARATIVE STATEMENT OF ARRIVALS AND CLEARANCES, TONNAGE AND AVERAGE TONNAGE.

YEAR.	Total arrivals and clearances.	Tonnage.	Average tons.	Average tons.
1885.....	1,803	1,372,233	761	.....
1886.....	2,180	1,694,831	778	17
1887.....	2,475	2,021,781	812	34
1888.....	2,200	1,943,236	887	75
1889.....	2,525	2,452,123	972	85
1890.....	2,534	2,740,354	1,090	118
1891.....	2,895	3,268,031	1,125	35
1892.....	3,482	3,810,652	1,095	30

## III—DULUTH TONNAGE.

	No. Vessels.	Tonnage.
1890.....	32	8.34
1891.....	35	8.21
1892.....	40	16.99

## IV—IMPORTS AND EXPORTS.

1892.	Foreign imports and duties.				Domestic Exports.
MONTH.	Imports.	Duties.	Tonnage duty.	Total duties.	Value.
January.....	\$1,251	\$410.24	.....	\$410.24	.....
February.....	439	108.17	.....	108.17	.....
March.....	4,701	3,209.60	.....	3,209.60	.....
April.....	.....	.....	.....	.....	\$136,900
May.....	14,872	511.35	\$15.27	526.62	458,640
June.....	13,570	1,651.39	15.27	1,666.66	340,323
July.....	11,502	184.97	10.80	195.77	207,000
August.....	14,655	1,472.73	15.27	1,488.00	269,020
September.....	12,499	2,084.83	31.50	2,116.33	155,727
October.....	17,081	2,089.65	16.63	2,106.28	224,222
November.....	19,929	4,158.90	23.10	4,182.00	42,936
December.....	8,150	824.45	.....	824.45	2,088
Total.....	\$117,759	\$16,706.28	\$127.84	\$16,834.12	\$1,837,466

## V—COMPARATIVE STATEMENT OF IMPORTS AND EXPORTS.

YEAR.	Imports.	Duties.	Tonnage duty.	Total duties.	Value of domestic exports.
1888.....	\$86,901	\$2,909.00	\$23.40	\$2,932.40	\$1,207,858
1889.....	21,852	2,931.00	49.80	2,980.80	1,405,447
1890.....	48,027	5,255.86	13.20	5,269.06	1,521,751
1891.....	155,446	4,764.97	86.40	4,851.37	2,079,173
1892.....	117,759	16,706.28	127.84	16,834.12	1,837,936



## VI—COMMODITIES IMPORTED AND WAREHOUSED.

YEAR.	Value.	Duties.
1889 .....	\$170 00	\$60.22
1890 .....	806.00	759.00
1891 .....	451.00	929.85
1892 .....	1,001.00	2,678.80

## VII—IMPORTED AND TRANSPORTED IN BOND.

YEAR.	Value.	Duties.
1889 .....	\$52.00	\$23.40
1890 .....	70,823.35	19,247.35
1891 .....	58,156.00	10,126.81
1892 .....	5,469.00	3,092.05

## VIII—FOREIGN TRANSIT TRADE.

1892. MONTH.	Westward. Value.	Eastward. Value.
*April .....		\$52,457.00
May .....	\$40,639.00	93,995.00
June .....	41,905.00	52,963.00
July .....	35,542.00	100,053.00
August .....	137,945.00	53,253.00
September .....	117,282.00	35,362.50
October .....	130,292.00	137,963.00
November .....	96,012.00	266,357.00
Total .....	\$599,617.00	\$792,403.50

## VIII½—COMPARATIVE STATEMENT.

YEAR.	Westward. Value.	Eastward. Value.
1887 .....	\$82,415.00	.....
1888 .....	245,094.00	.....
1889 .....	705,495.00	\$87,632.00
1890 .....	820,164.66	381,850.00
1891 .....	714,199.00	626,827.82
1892 .....	599,607.00	792,403.50

## IX—EXPENSE OF COLLECTING THE REVENUE FROM CUSTOMS.

YEAR.	Receipts.	Expenses.	Cost of col'ct'g \$1.
1887 .....	\$6,582.00	\$5,799.00	\$ .88
1888 .....	4,557 00	4,821.00	1.05
1889 .....	5,085.00	5,460.00	1.07
1890 .....	5,752.97	5,717.46	.99
1891 .....	4,850.74	5,491.74	1.15
1892 .....	16,834.12	6,820.55	.40

## X—WRECK REPORTS.

YEAR.	Vessels damaged by fire.	Vessels otherwise damaged.	Total loss and damage.
1887 .....	\$7,000	\$5,000	\$12,000
1888 .....	2,700	4,000	6,700
1889 .....	23,520	19,000	42,520
1890 .....	20,000	970	20,970
1891 .....	62,000	9,500	71,500
1892 .....	8,000	12,500	20,500

## XI—TONNAGE ADMEASUREMENTS, 1892.

Number of vessels built.....	7
Gross tonnage .....	295.31
Net tonnage .....	201.96

## XII—OPENING AND CLOSING DULUTH HARBOR FOR THIRTEEN YEARS.

YEAR.	Opened	Closed.	Remarks.
1880 .....	May 1 .....	Dec. 17 .....	.....
1881 .....	May 8 .....	Dec. 16 .....	.....
1882 .....	May 15 .....	Dec. 30 .....	.....
1883 .....	May 9 .....	Dec. 29 .....	.....
1884 .....	May 1 .....	Jan. 1 .....	1885
1885 .....	April 27 .....	Jan. 10 .....	1886
1886 .....	May 7 .....	Dec. 30 .....	.....
1887 .....	May 4 .....	Dec. 19 .....	.....
1888 .....	April 21 .....	Jan. 17 .....	1889
1889 .....	April 11 .....	Jan. 12 .....	1890
1890 .....	April 2 .....	Feb. 2 .....	1891
1891 .....	April 30 .....	Feb. 13 .....	1892
1892 .....	April 20 .....	Dec. 30 .....	.....

## XIII—RECEIPTS BY LAKE.

1892. MONTH.	Coal, tons.	Salt, barrels.	C'm'nt ba'rels	Lime and bldg stone, tons.	Manu- fac'd iron, tons.	Fish, tons.	Staves.	Miscel- laneo's mdse, tons.	Total all kinds in tons.
January .....								2	2
April .....	49,110	8,000	3,000			2		3,226	54,188
May .....	145,912	31,778	6,650	3,390	350	30	555,000	32,308	183,486
June .....	125,231	24,787	8,835	3,932	10	73	916,620	33,389	167,134
July .....	147,146	9,035	1,968	4,086	2,051	69	112,000	33,419	197,831
August .....	87,536	12,243	14,035	3,106	794	45	759,500	33,182	129,225
September .....	128,252	13,566	5,270	1,965	2,355	41	792,700	34,222	156,443
October .....	106,197	10,358	16,278	1,150	2,242	42	769,500	32,755	147,636
November .....	92,382	27,674	4,500	900	4,780	2	1,654,320	22,074	124,298
December .....	3,500					4		1,060	4,564
Total .....	885,266	137,435	60,536	18,529	12,582	308	5,559,320	225,637	1,169,807

## XIV.—SHIPMENTS BY LAKE.

1892. MONTH.	Wheat. Bushels.	Corn, oats, barley and rye. Bushels.	Flax seed. Bu.	Flour. Bbls.	Mill stuff. Tons.	L'mb'r M feet.	Iron ore. Tons.	Misel. mdse. in tons	Total all kinds in tons.
April.....	2,383,907	.....	192,000	71,345	.....	.....	13,890	30	96,934
May.....	3,443,061	10,445	64,000	314,875	1,468	475	81,891	2,117	234,832
June.....	898,017	39,400	76,100	358,707	2,466	820	141,658	3,716	215,561
July.....	1,546,954	8,000	.....	336,165	1,635	1,360	193,309	10,436	238,100
August.....	940,963	6,600	80,000	353,383	2,178	5,910	206,631	3,005	292,645
September..	1,807,129	41,329	65,000	291,368	3,170	3,613	146,844	6,420	243,966
October....	2,262,601	68,151	.....	303,954	2,536	5,090	138,638	4,071	255,308
November..	1,829,050	54,075	.....	318,558	1,966	2,125	62,723	2,589	164,309
December..	.....	834	.....	.....	10	.....	.....	60	84
Total.....	15,111,682	228,834	477,100	2,345,355	15,429	19,393	984,584	32,444	1,731,439

The above tables constitute the official statistics of Duluth as far as lake carriage is concerned, and should be substantially correct. This is far from being the case, however. As explained in my last annual report, the laws of navigation now in force allow so wide a liberty of construction in the matter of reports and clearances of vessels that for so-called intermediate ports no correct commercial statistics, from official sources, are possible. This state of things is well understood at Superior, whose statisticians from the fact that generally, vessels have to pass first through the Duluth canal before they can enter that place, claim that Duluth is an intermediate port, where vessels with or without cargo destined for Superior across the way need not report for customs purposes at all. The fallacy of this stand is obvious when it is explained that Superior is not west of Duluth, nor is it further inland, for the same north and south line runs, through the center of both places, and it is a well known fact that the lumber output of our mills when bound for eastern markets are laden in vessels on St. Louis Bay, within the city limits of Duluth, and west of the city limits of Superior. According to this rule of course Superior is the intermediate port, for the limits of Duluth extend farther inland from the entrance to our harbor than Superior does. I have explained this matter to the department in more than one instance, and requested some special ruling which should decide the matter equitably for both places. In the absence of such ruling vessel masters virtually do as they please about reports and clearances, and very many that should report at Duluth are persuaded not to because it is a step further to the Superior docks from the canal entrance than it is to some of the docks on the Duluth side of the bay.

Trivial as the lines are, thus drawn, they are nevertheless used under the shadow of the laws of navigation now in force to produce a discrimination against Duluth, which, when properly examined into, takes on enormous proportions.

Last year this discrimination against us amounted to about 18 per cent; this year it is more, or about 20 per cent; that is, 20 per cent more transactions should have been reported at Duluth that were actually reported at Superior. *Now, taking this 20 per cent away from us and giving it to a rival doubles the discrimination of course, so that it is the prestige of 40 per cent instead of 20 per cent that we lose by this means.*

This matter was explained more in detail in my last annual report. The way the true amount of this discrimination is arrived at is to compare the official tables XIII and XIV of receipts and shipments, taken from the books of the custom house, with table XV from unofficial sources, which follows:

XV.—RECEIPTS AND SHIPMENTS BY LAKE.—Exclusive of timber afloat—in tons—from unofficial sources.

COMMODITIES	Receipts.	Shipm'ts.	All kinds in tons.
Wheat, bushels.....		20,113,662	609,505
Corn, bushels.....		10,031	251
Oats, bushels.....		205,397	3,433
Barley, bushels.....		198,217	4,955
Rye, bushels.....		27,345	684
Flax seed, bushels.....		444,174	12,691
Flour, barrels and sacks.....		2,884,825	288,483
Mill stuff, tons.....		1,012	1,012
Coal, tons.....	1,168,068		1,168,068
Iron ore, tons.....		1,344,885	1,304,885
Copper, tons.....	50	5,880	5,930
Manufactured iron.....	16,773		16,773
Salt, barrels.....	26,194		3,029
Cement, barrels.....	12,025		2,405
Building stone, tons.....	54,649		54,649
Lime, tons, tons.....	16,087		16,087
Cedar, cords.....	17,000		25,500
Lumber, feet.....		27,076,000	27,076
Shingles.....		57,000	14
Staves.....	1,986,640		993
Fish, pounds.....	1,600,000		800
Sand and gravel tons.....	102,640		102,640
Miscellaneous merchandise, tons.....	110,480	23,465	133,945
Total tons.....			3,784,698

Timber afloat 77,000,000 feet.

By this means it will be seen that the difference between the iron ore reported shipped and actually shipped from Two Harbors is 320,301 tons, or nearly 30 per cent of the total shipments from that sub-port, and that the difference on the wheat reported and actually shipped is almost as great, or 25 per cent. In fact, without itemizing particularly the difference in all commodities, I will merely state that the difference between the official report of the tons moved and the unofficial is 883,452 tons, or about 33 per cent of the whole amount. This enormous disproportion does not exist, however, but it does amount to about 20 per cent. In order to explain this it is necessary to state that the Superior statisticians have been so busy appropriating Duluth transactions to themselves that they have overlooked some two or three hundred thousands tons of stuff that legitimately belongs to them, and with which they are credited in the following tables:

XVI.—STATISTICS OF DULUTH CANAL, 1892.

OFFICIAL.					Same from unofficial sources.
CITY.	Arriv'ls and clearances	Tonnage.	Average tonnage.	Tons moved.	Tons moved.
Duluth.....	3,482	3,810,652	1,095	2,901,246	3,784,698
Superior.....	1,940	2,496,507	1,286	1,764,007	1,764,698
Total.....	5,422	6,307,159	1,163	4,665,253	5,548,705

XVII.—The same showing adjustment of 20 per cent discrepancy between Duluth and Superior.

					Same from unofficial sources.
CITY.	Arriv'ls and clearances.	Tonnage.	Average tonnage.	Tons moved.	Tons moved.
Duluth.....	4,178	4,572,682	1,125	3,481,495	3,784,698
Superior.....	1,244	1,734,477	1,256	1,183,758	1,764,007
Total.....	5,422	7,307,159	1,163	4,665,253	5,548,705

C. F. JOHNSON,  
Collector of Customs.



## STATEMENT IX.

## REPORT FROM UNITED STATES INTERNAL REVENUE DEPARTMENT.

INTERNAL REVENUE SERVICE, DISTRICT OF MINNESOTA,  
COLLECTOR'S OFFICE, ST. PAUL, MINN., January 7, 1893. }

*Hon. H. Stockenström, Commissioner of Statistics, St. Paul.*

DEAR SIR:—I enclose herewith a detailed statement of collections from internal revenue for the district of Minnesota, for the period ended Dec. 31, 1892, as per your request of Jan. 5th.

Respectfully yours,  
MARCUS JOHNSON, Collector.

1892.	List.	Beer.	Spirits.	Cigars.	Snuff.	Tobacco.	Specials.	Totals.
January.....	\$225.00	\$17,751.45	\$154,855.20	\$9,828.15	\$170.70	\$526.11	\$1,114.84	\$184,471.45
February.....	30.54	24,302.41	135,638.20	10,103.78	232.80	1,054.20	734.25	172,086.19
March.....	304.85	26,647.29	137,668.50	11,590.29	183.00	1,326.48	1,097.67	178,778.08
April.....	70.96	27,985.19	125,221.50	11,625.84	167.10	1,377.15	1,977.09	167,624.83
May.....	103.34	28,732.35	123,775.20	11,625.93	208.02	1,635.63	739.74	166,820.21
June.....	271.56	41,495.15	117,004.60	13,599.93	216.00	1,627.41	53,902.60	228,116.95
July.....	215.37	43,528.31	136,714.20	12,732.31	235.38	1,873.26	45,985.00	241,283.83
August.....	467.61	41,339.41	164,237.20	12,843.51	289.16	1,943.85	4,245.92	225,366.06
September.....	98.69	32,322.04	324,738.10	12,444.87	190.50	1,667.73	2,242.66	373,694.59
October.....	53.26	33,704.46	175,299.30	12,873.74	298.50	1,182.18	1,666.25	225,017.69
November.....	79.23	27,766.30	173,087.10	12,961.21	242.26	1,068.41	1,602.41	216,386.92
December.....	279.75	28,223.49	210,841.20	12,897.28	195.18	738.21	2,149.51	255,234.62
Totals.....	\$2,199.56	\$373,797.85	\$1,979,080.30	\$144,996.54	\$2,538.60	\$15,610.62	\$116,557.95	\$2,634,781.42

## STATEMENT X.

## MARRIAGES, DIVORCES AND NATURALIZATIONS IN 1892.

COUNTIES.	Marriages.	Divorces.	NATURALIZATIONS.					
			Scandi- navians.	Germans Poles, Bo- hemians and Rus- sians.	Irish.	English & Scotch.	Other national- ities.	Total nat- uraliza- tions.
Aitkin.....	24	1	50	3	1	19	1	83
Anoka.....	68	4	42	5	1	9	9	66
Becker.....	84	5	73	29	.....	19	2	123
Benton.....	48	4	6	35	.....	8	.....	49
Big Stone.....	93	.....	54	7	1	7	3	72
Blue Earth.....	254	9	44	115	.....	19	2	180
Brown.....	164	5	41	80	1	7	5	134
Carlton.....	48	.....	162	2	5	4	2	175
Carver.....	154	1	47	71	.....	.....	5	123
Chippewa.....	79	2	50	28	10	.....	.....	88
Chisago.....	55	2	33	.....	.....	.....	.....	33
Clay.....	124	5	142	14	1	17	1	175
Cook.....	.....	.....	.....	.....	.....	.....	.....	1
Cottonwood.....	58	4	56	33	.....	2	2	93
Crow Wing.....	109	11	76	18	5	32	7	138
Dakota.....	111	8	48	46	5	9	6	114
Dodge.....	82	7	57	10	.....	5	.....	72
Douglas.....	128	4	82	37	.....	1	.....	120
Faribault.....	172	.....	45	41	.....	9	10	105
Fillmore.....	201	13	40	40	3	3	.....	86
Freeborn.....	166	10	164	13	1	2	10	190
Goodhue.....	175	2	180	53	.....	9	10	252
Grant.....	66	.....	97	.....	.....	4	1	102
Hennepin.....	2,025	182	1,270	257	526	.....	309	2,362
Houston.....	69	2	75	19	.....	1	.....	95
Hubbard.....	18	1	6	4	.....	17	1	28
Isanti.....	63	1	64	1	.....	.....	.....	65
Jackson.....	89	1	40	36	1	9	1	87
Kanabec.....	11	.....	48	.....	.....	.....	.....	48
Kandiyohi.....	125	.....	152	3	.....	2	9	166
Kittson.....	35	4	118	3	.....	6	17	144
Lac qui Parle.....	126	4	125	9	.....	.....	2	136
Lake.....	12	.....	101	1	2	1	17	122
Le Sueur.....	137	4	22	84	1	1	11	119
Lincoln.....	40	.....	48	12	.....	.....	.....	60
Lyon.....	131	5	88	50	3	7	10	158
McLeod.....	144	3	31	120	.....	2	2	155
Marshall.....	72	.....	133	14	.....	1	11	159
Martin.....	101	.....	16	27	.....	4	2	49
Meeker.....	112	2	190	14	2	.....	13	219
Mille Lacs.....	29	2	45	2	1	.....	7	55
Morrison.....	140	10	105	95	5	5	5	215
Mower.....	166	13	91	70	.....	11	4	176
Murray.....	55	3	31	13	3	3	7	57
Nicollet.....	99	2	91	37	3	3	.....	134
Nobles.....	71	2	42	25	1	10	.....	78
Norman.....	92	.....	103	2	.....	1	.....	106
Olmsted.....	183	7	49	55	12	17	3	136
Otter Tail.....	299	8	14	19	.....	.....	.....	33
Pine.....	38	.....	110	20	1	24	6	161
Pipestone.....	77	1	20	10	1	20	4	55
Polk.....	310	11	220	20	38	5	8	291
Pope.....	84	4	102	12	3	6	12	135
Ramsey.....	1,435	84	463	540	142	299	611	2,055
Redwood.....	112	8	30	25	2	6	5	68
Renville.....	129	2	41	16	.....	.....	23	80
Rice.....	280	12	100	150	50	25	25	350
Rock.....	69	4	64	6	1	.....	1	72
St. Louis.....	474	28	563	836	23	328	79	1,829
Scott.....	84	1	17	52	9	2	7	87
Sherburne.....	29	1	29	4	.....	7	1	41
Sibley.....	101	1	15	42	3	1	3	64
Stearns.....	337	9	90	286	8	28	9	419
Steele.....	109	7	55	63	5	8	.....	131
Stevens.....	53	1	62	14	3	4	8	91
Swift.....	71	.....	60	14	5	5	9	102

STATEMENT X.—*Continued.*

COUNTIES.	Marriages.	Divorces.	NATURALIZATIONS.					
			Scandi- navians.	Germans, Poles, Bo- hemians and Rus- sians.	Irish.	English & Scotch.	Other na- tional- ities.	Total nat- uraliza- tions.
Todd .....	288	10	25	120	5	10	.....	160
Traverse .....	40	.....	65	8	2	2	.....	85
Wabasha .....	115	4	20	52	11	.....	.....	87
Wadena .....	69	1	21	11	2	3	53	90
Waseca .....	90	2	13	20	5	2	.....	40
Washington .....	194	12	118	48	16	45	34	261
Watonwan .....	73	1	76	15	2	.....	8	101
Wilkin .....	29	1	39	13	.....	7	.....	59
Wipona .....	248	15	30	185	40	.....	.....	258
Wright .....	202	3	95	23	9	8	18	153
Yellow Medicine .....	110	.....	115	13	.....	2	3	133
Supreme Court .....	.....	.....	443	130	15	44	62	694
Totals .....	12,157	576	7,806	4,400	993	1,177	1,509	15,885

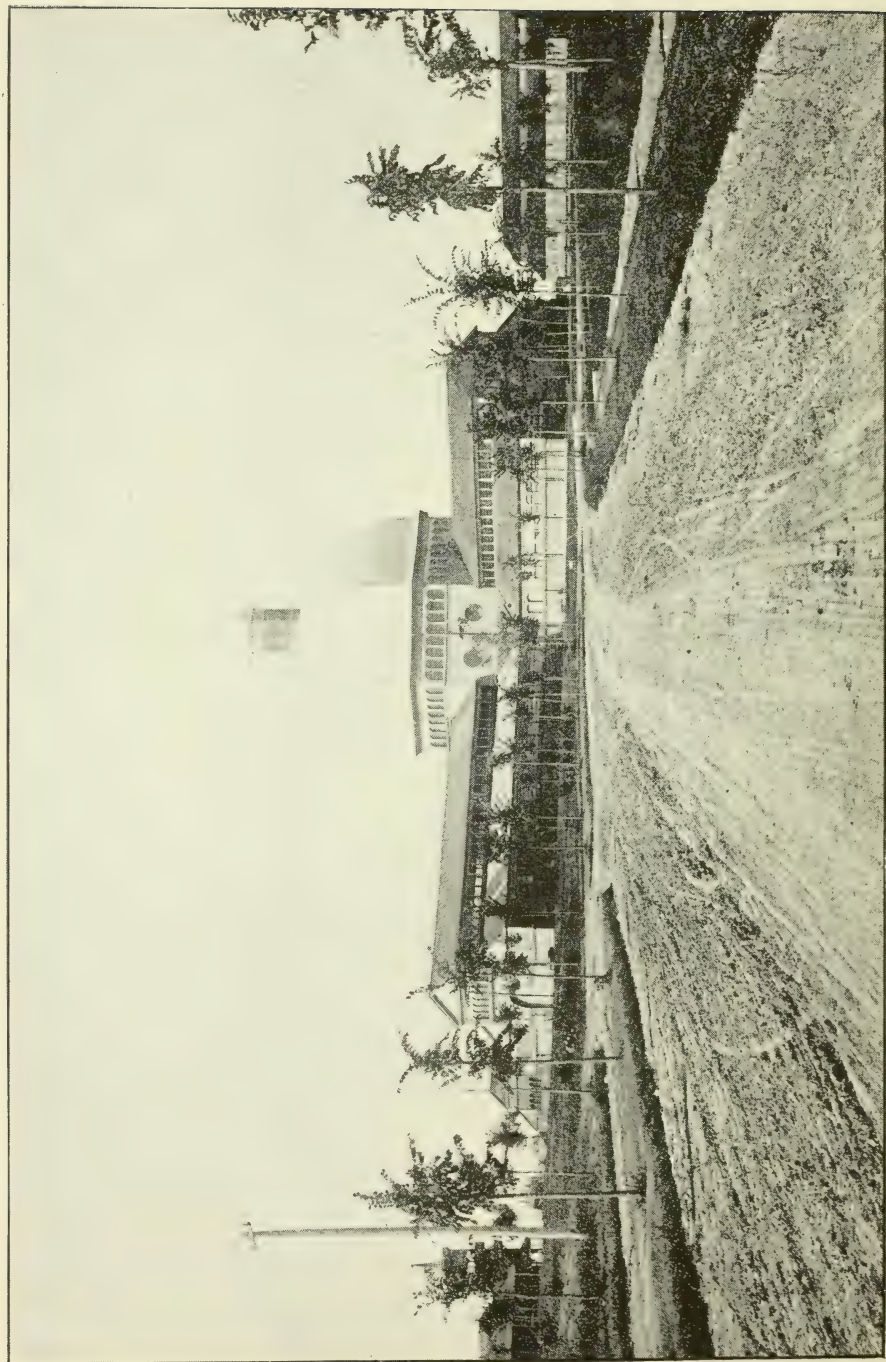
TABLE

*Showing Marriages, Divorces and Naturalizations in Minnesota for the last Eleven Years.*

YEARS.	Marriages.	Divorces.	NATURALIZATIONS.					
			Scandi- navians.	Germans, Poles, Bo- hemians, Russians.	English & Scotch.	Irish.	Other na- tionalities	Total.
1882 .....	8,256	354	8,628	2,292	1,041	646	764	13,371
1883 .....	8,878	293	5,049	2,123	1,231	356	453	9,212
1884 .....	9,047	480	9,166	4,790	1,784	705	1,026	17,471
1885 .....	9,441	452	1,761	985	405	315	256	3,722
1886 .....	8,941	415	6,354	3,424	1,621	370	588	12,357
1887 .....	9,413	430	1,552	748	212	157	398	3,067
1888 .....	10,847	588	11,151	5,741	1,442	987	1,303	20,624
1889 .....	10,181	499	1,517	804	254	84	284	2,943
1890 .....	10,358	538	6,045	2,260	919	285	1,346	10,855
1891 .....	11,067	606	1,351	534	197	155	320	2,557
Supreme court from the organization of the state up to 1892. ....	.....	.....	3,945	1,378	286	187	269	6,065
1892 .....	12,157	576	7,806	4,400	1,177	993	1,509	15,885
Totals .....	108,586	5,231	64,325	29,479	10,669	5,140	8,516	118,129







VIEW OF THE STATE FAIR GROUNDS FROM THE MAIN ENTRANCE.

# ANNUAL REPORT

OF

## Minnesota State Agricultural Society,

### FOR THE YEAR 1892.

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CONTAINING SECRETARY'S REPORT TO THE GOVERNOR, PROCEEDINGS OF  
THE SOCIETY, FINANCIAL STATEMENTS, INCLUDING AUDITOR'S  
AND TREASURER'S REPORTS, STATEMENT OF ENTRIES,  
AWARDS, AND REPORTS FROM DISTRICT  
AND COUNTY SOCIETIES; PAPERS ON  
VARIOUS SUBJECTS, &C., &C.

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COMPILED BY  
W. F. CROSS, SECRETARY,  
HAMLINE, MINN.



MINNEAPOLIS:  
HARRISON & SMITH, PRINTERS  
1893.



# Minnesota State Agricultural Society.

## OFFICERS AND BOARD OF MANAGERS, 1892.

President,	-	-	-	J. H. BURWELL,	-	-	St. Paul
First Vice President,	-	-	-	J. H. STEVENS,	-	-	Minneapolis
Second Vice President,	-	-	-	ED. WEAVER,	-	-	Mankato
Secretary and General Manager,	-	-	-	W. F. CROSS,	-	-	Hamline
Ass't Secretary and Librarian,	-	-	-	SAM PARTRIDGE,	-	-	Hamline
Treasurer,	-	-	-	FRANK J. WILCOX,	-	-	Northfield

## BOARD OF MANAGERS.

W. M. LIGGETT, Benson,	-	-	-	-	Term expires 1895
J. H. LETSON, Alexandria,	-	-	-	-	Term expires 1895
C. N. COSGROVE, Le Sueur,	-	-	-	-	Term expires 1894
CLARKE CHAMBERS, Owatonna,	-	-	-	-	Term expires 1894
W. R. TANNER, Moorhead,	-	-	-	-	Term expires 1893
J. J. FURLONG, Austin,	-	-	-	-	Term expires 1893

## SUPERINTENDENTS OF DIVISIONS.

*Horses.*—Clarke Chambers, Owatonna.

*Cattle.*—W. M. Liggett, Benson.

*Sheep and Swine.*—J. H. Letson, Alexandria.

*Poultry.*—J. J. Furlong, Austin; Manager, Leslie Parlin, St. Paul.

*Dairy Products.*—J. A. Lawrence, St. Paul.

*Honey and Apiary.*—J. P. West, Hastings.

*Main Building.*—J. H. Burwell, St. Paul.

*Horticulture and Floriculture.*—J. M. Underwood, Lake City.

*Vegetables, Grain and Farm Products.*—J. H. Stevens, Minneapolis.

*Machinery, Farming Implements and Carriages.*—Ed. Weaver, Mankato.

*Gates.*—C. N. Cosgrove, Le Sueur.

*Forage.*—W. R. Tanner, Moorhead.

*Farmers' Institute.*—O. C. Gregg, Minneapolis.

## STANDING COMMITTEES.

*Executive.*—President, Clarke Chambers, W. M. Liggett.

*Reception.*—President, First Vice President, Second Vice President, J. J. Furlong, W. R. Tanner.

*Auditing.*—W. M. Liggett, Clarke Chambers.

*Transportation.*—Ed. Weaver, C. N. Cosgrove, J. H. Stevens.

*Gates.*—C. N. Cosgrove, J. J. Furlong, W. R. Tanner.

*Awards and Diplomas.*—J. H. Stevens, J. H. Letson, W. R. Tanner.

*Racing, Track and Grand Stand Attractions.*—Clarke Chambers, C. N. Cosgrove, Ed. Weaver.

*Music.*—J. J. Furlong, W. M. Liggett, Ed. Weaver.

*Advertising and Printing.*—Wm. M. Liggett, J. H. Letson, J. H. Stevens.

*Grounds and Water Supply.*—W. R. Tanner, J. J. Furlong, J. H. Letson.

*Buildings, Avenues and Trees.*—J. H. Letson, Clarke Chambers, J. H. Stevens.

The President and Secretary are *ex officio* members of all committees.

# Minnesota State Agricultural Society.

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## SECRETARY'S REPORT.

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SECRETARY'S OFFICE, STATE FAIR GROUNDS, }  
HAMLINE, MINN., DEC. 10, 1892. }

*To His Excellency Wm. R. Merriam, Governor:*

In compliance with the laws governing this society, I herewith submit a financial statement for the year ending December 10, 1892.

The past year has been an eventful one for the State Agricultural Society. In May the board of managers decided that as the society was free from debt, with money in the treasury, its interests would be best subserved by investing liberally in substantial improvements upon the grounds. The secretary was therefore directed to expend a reasonable amount of money in painting the buildings, grading avenues, boulevards and walks, and in setting out trees, shrubs, etc.

The work that has been done demonstrates the wisdom and good judgment manifested by the management in this direction, for what last May was a bare field, with a group of buildings upon it, is now a park laid out with taste, with a young growth of trees that in a very few years will be a forest of beautiful elms, maples and evergreens, which will greatly enhance the beauty and value of a place intended by the Creator of the universe for the home of the Minnesota State Agricultural Society.

The magnificent grand stand, erected by the Twin City Jockey Club, exemplifies the wisdom displayed by the management of 1891 in granting to them a lease for a term of years, of the track and stables for a portion of each year, in consideration of their building, at their own expense, a structure to cost not less than thirty thousand dollars. The club have already invested over sixty thousand dollars, and intend further to erect stables that will accommodate two hundred horses. All of these improvements belong to this society and cost it nothing.

Our state fair is growing in favor, and gaining in popularity every year. The accessibility and convenience of the grounds, comfortable quarters for animals, and the liberality of the management, are all spoken of by both exhibitors and visitors, in the highest praise.

The weather during the fair was unfavorable, and prevented many people from attending, and cut down our gate receipts considerably. Notwithstanding this, the society more than paid expenses, as our report shows. While we have but a small balance in the treasury, we have reason to believe that our funds have been well expended in the improvements made upon the grounds, and that the investment will prove not only a source of enjoyment to our patrons, but will also increase the interest in our fairs, thereby enlarging our receipts and profits.

All of which is respectfully submitted,

WM. F. CROSS,  
Secretary.



# ANNUAL MEETING

## OF THE

### Minnesota State Agricultural Society.

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Pursuant to law and the regularly published call, the State Agricultural Society convened in the senate chamber at the capitol in St. Paul, on Tuesday, January 12th, 1892, at 10 o'clock a. m.

The meeting was called to order by the president, D. M. Clough and the call read by the secretary, W. F. Cross.

The minutes of the last annual meeting was read and on motion of Col. J. H. Stevens, approved.

Jared Benson moved that a committee on credentials be appointed by the chair; carried.

The president appointed as such committee, Jared Benson, Anoka; H. W. Stone, Morris; L. H. Prosser, Wykoff; Joel Heatwole, Northfield; and J. H. Baker, Garden City.

The secretary's report was read by W. F. Cross, and accepted and referred to a committee.

*To the President and Members of the State Agricultural Society:*

GENTLEMEN: Before giving you a financial statement for the year ending December 10th, 1891, as required by law, I beg leave to give you, in brief, a history of the operations of the board of managers and officers of the society during the past year.

At the annual meeting held January 13, 1891, Mr. F. B. Clark, of St. Paul was elected president, Mr. D. M. Clough, first vice-president, and Mr. Lysander Cook, second vice-president. Mr. Clark declining to serve, April 21, Mr. D. M. Clough was elected by the board of managers as president, and Mr. Lane K. Stone of St. Paul, as first vice-president. By reason of the death of J. J. Alexander, Mr. J. J. Furlong, of Austin, was elected to fill the vacancy. The board as organized elected Mr. W. F. Cross, of Red Wing, secretary; Sam Partridge, of Moorhead, assistant secretary; and Frank J. Wilcox, of Northfield, as treasurer, for the balance of the year.

June 23, Mr. John Cooper, tendered his resignation as member of the board of managers, and Mr. W. R. Tanner, of Moorhead, was elected in his place.

The present board of managers was organized very late in the season, but owing to the very efficient work of the preceding administration, and the very liberal appropriation made by the last legislature, which enabled

the society to commence the work of preparation for the next fair out of debt, the managers and officers were inspired with the feeling of confidence, and with close attention to the details of the work, and with a determination to save in expenses every dollar possible, they are now enabled to make a better showing, financially, than has ever been made during the history of the society. This will be apparent to you all, by a comparison of the receipts and expenditures of the past year with the years commencing with 1885, the date of the first fair held on the present grounds of this society.

The balance now on hand, as shown in our statement, is not so much on account of a large attendance at the fair, or large receipts from other sources, as it is due to the fact that expenses in every department have been kept down to the minimum, and I want to emphasize the point that this is the way that fairs can be made to pay expenses.

The premiums paid this year were more in the aggregate than any previous year, with the exceptions of 1888 and 1890. In this direction it is good policy to be liberal, for good premiums offered insures a good exhibit, and with three days of good weather the fair will be a financial success.

Of the surplus left in the treasury, \$6,000 has been placed with the First National Bank of Northfield at 4 per cent. interest.

The first work planned this year was in the interest of the Farmers' Institute. This work was taken up later on by Superintendent, O. C. Gregg, and his assistants, and was made a very interesting feature of the fair, and should be carried forward by the incoming administration.

A contract has been made with the Twin City Jockey Club, the terms of which will give to this society improvements of a valuable nature amounting to from thirty to forty thousand dollars, without any cost to the society.

Early in the spring, some improvements should be made upon the grounds, buildings should be repaired and repainted, streets and walks should be graded, trees and shrubs set out, etc., etc.

The treasurer's report was read.

Mr. J. P. West, deputy state bank examiner, claimed that the treasurer's report was not sufficiently itemized, and that a statement should have been presented showing all the sources from which funds had been received.

President stated in answer to Mr. West that it had not been customary in the past to present such a report. The book could be examined by any member.

Mr. West moved that a recess be taken until 1:30 p. m. Carried.

At 1:30 reassembled according to adjournment.

The committee on credentials made the following report, giving the names of delegates entitled to vote:

Anoka county, Dr. D. C. Dunham, John Hunter and Thos. Coleman, 3; Becker, G. W. Taylor, 3; Blue Earth, Wm. Thomas, 1; Carver, Frank Warner, Otto Weisenburg and C. H. Clorn, 3; Central Minn., John Cooper, 3; Clay, W. R. Tanner, 2; Dakota, Peter Martin, Dr. J. R. Conway and A. C. Bruce, 3; Dodge, G. B. Arnold, Henry Currier and W. A. Sparrow, 3; Douglas, Jas. H. Letson, 3; Fillmore, L. H. Prosser, 3; Goodhue, Wm. Doxey, S. B. Barteau and T. N. Lee, 3; Kandiyohi, C. M. Reese, 1; Lac qui Parle, H. L. Hayden, 3; Le Sueur, A. B. Moffatt, R. VanLehl and J. P. Funk, 3; McLeod, C. N. Perkins, 3; Mower, H. W. Lightly, E. B.

Williams and A. Kimball, 3; Pope, Peterson, C. L. Peterson and M. G. Rigg, 3; Kenville, H. V. Poore, 3; Southern Minnesota, A. T. Stebbins, 1; Rock, F. N. VanDuzee, 1; Stevens, H. W. Stone, 3; Rice, J. P. Heatwole, Josh Roach and J. L. DeLancey, 3; Steele, N. J. Schafer, Clarke Chambers and J. A. Harris, 3; Swift, R. R. Johnson, A. D. Aldrich and H. W. Stone, 3; Tracey district, H. F. Seiter, 3; Waseca, J. T. Dunn, S. Leslie and M. Sheran, 3; Winnebago City, A. L. Fox, 1; Wright, Johnstone Mealey and W. H. Hoar, 3; State Dairyman, C. N. Perkins, 1; State Bee-keepers, J. P. West, 1; State Forestry, Col. J. H. Stevens, 1; Farmers' Alliance, Dr. E. W. Fish and H. L. Wilcox, 2; Life Members, J. W. Boxall, W. L. McGrath, W. L. Ames, L. Hoyt, J. H. Baker, J. G. Bass, W. Brimhall, A. Bohland, Jared Benson, Clarke Chambers, John Cooper, N. P. Clarke, C. N. Cosgrove, W. F. Cross, S. M. Emery, G. R. Finch, F. G. Gould, Dan Getty, J. A. Harris, Frank D. Holmes, R. C. Judson, John Kerwin, L. Prosser, D. Ramaley, Col. J. H. Stevens, T. Slater, H. W. Stone, Sr., G. W. Sherwood and M. C. Tuttle.

Frank Warner of Carver county, moved the following resolution which was seconded and adopted:

"That, a committee of three be appointed to investigate as to the receipts of the secretary of the State Agricultural Society by reason of all entries made by him of moneys received by him for races, of exhibits at fair, and for all other purposes, and to ascertain if the secretary has paid over to the treasurer of said society all the moneys so received. That said committee consist of three persons, to wit: J. P. West, chairman, Geo. B. Arnold and J. H. Stevens."

The secretary's report, including the financial report, as accepted was referred to the above committee and they were to report to the board of managers.

Before proceeding to the election of officers, President Clough made a few remarks, thanking the officers of the association for their support during his term of office, and made a few suggestions for the future management of the fair. He said:

"It is not necessary to have six days of good weather to make the Fair a financial success. Four days with a good management will always pay our bills. It has been customary for the managers to draw each year a salary of \$250 and expenses, and these sums amount to nearly \$3,000. The other salaries foot up to about the same amount, and you are not certain of success as long as you pay nearly \$6,000 for salaries. The secretary and his assistant should be paid well, for most of the work falls upon their shoulders. The managers should have only their traveling and hotel bills paid. I would further recommend that the secretary be elected superintendent of grounds, as he can attend to that work much better than another man. If you will elect a good business man as president, and re-elect Secretary W. F. Cross, and Assistant Secretary Sam Partidge, and a board of directors that will work in harmony, there will be no such thing as a failure in the management of our State Fair."

A motion that a special committee of three be appointed to consider the president's suggestions, and report on the advisability of being governed by them, was carried.

General J. H. Baker offered the following resolution, which was seconded by Lane K. Stone, and unanimously adopted:

*Resolved*, "That the thanks of this society are hereby tendered to the retiring President, Hon. D. M. Clough, for the energy, the fidelity, and business methods which has characterized his administration, and he carries with him in his retirement, our best wishes for his personal prosperity and happiness."

H. W. Stone moved that an informal ballot be taken for president; carried.

The chair appointed as tellers L. K. Stone, John Cooper and D. M. Reese.



The result of this informal ballot was—votes 97. J. H. Burwell, 58; J. H. Baker, 14; S. M. Owens, 14; W. M. Liggett, 4; Clarke Chambers, 3; Scattering 4.

A motion was made to make Mr. Burwell's election unanimous; carried.

On motion of N. P. Clarke, the secretary was instructed to cast the ballot in favor of Mr. Burwell; carried, and the secretary cast the ballot.

N. P. Clarke moved the nomination of S. M. Owen of Minneapolis for first vice president.

John Cooper moved to make the election unanimous, and the secretary was instructed to cast the ballot for Mr. Owen. So done.

E. S. Moffatt of Le Sueur, nominated Mr. Ed Weaver of Mankato and Col. J. H. Stevens, nominated John H. Hunter of Anoka, for second vice-president.

Ballot ordered for formal ballot, resulting in the election of Mr. Weaver. Ninety-nine votes cast; Ed Weaver receiving 60 and John Hunter 39. Mr. Weaver's election was on motion made unanimous.

J. P. Heatwole nominated and N. P. Clarke seconded W. M. Liggett to succeed himself as manager. On motion of C. N. Perkins, the secretary was instructed to cast the ballot for Col. Liggett as manager. So done.

A. T. Stebbins nominated for the second vacancy in the board of managers, James H. Letson, of Alexandria; seconded by N. P. Clarke. And Peter Martin nominated John Byers of Hastings. Johnson Mealey of Howard Lake, was also put in nomination. An informal ballot ordered; result 98 votes. James H. Letson, 63; John Byers, 25; Johnson Mealey, 5; Scattering 5.

The informal ballot was made formal and Mr. Letson was declared unanimously elected.

A. Kimball moved and J. H. Harris seconded the following resolution:

*Resolved*, "That in regard to the question of vacancies filled by the board of managers during the past year, and their powers and limitations in the matter, it be referred to the attorney general of the State for his written opinion on the same. That in case of a question being raised by this decision, the president and secretary of this society be authorized and requested to secure such further and additional legislation as may be necessary to carry the attorney general's opinion into effect."

General J. H. Baker moved and Dr. E. W. Fish seconded the following resolution.

*Resolved*, "That the State Agricultural Society instruct the board of managers to have no liquor selling or gambling devices permitted upon the State Fair Grounds, especially as it is in direct violation of the law, and against the sentiment of the people." Carried.

The claim of G. D. Knox was brought up by the secretary reading the the following letter received from Burdick Post:

"BURDICK POST NO. 3, DEPT. MINN.

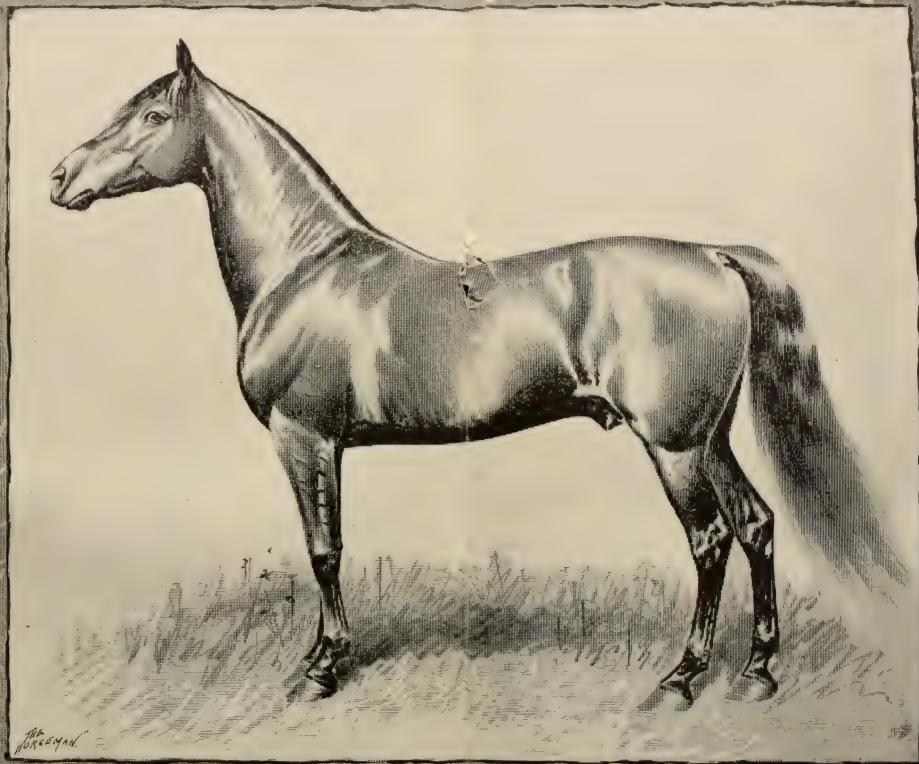
G. A. R. SPRING VALLEY, NOV. 16, 1891.

*To the Honorable Board of Managers of the State Agricultural Society:*

*Gentlemen:* In your reply to this post dated June 27, 1891, you say "your communication relative to paying Geo. D. Knox the sum of \$750 was presented to the board of managers of the State Agricultural Society by Ex-Manager James Compton, and duly considered.

"The board directs me to say to you that a lack of funds in the treasury of this society prevents their favorable consideration of the matter at this time. The appropriation made by the last legislature for the liquidation of the debts of this society has been exhausted, leaving the treasury as bare as before."





"RED CHIEFTAIN." OWNED BY O. J. EVANS, MINNEAPOLIS, MINN.



Gentlemen, we have waited patiently in this matter, until you now have the money to pay this debt. A committee appointed by a board of your society reported "that the State Agricultural Society pay the further sum of \$750 and the department commander of Minnesota G. A. R. raise a like sum to be placed in the hands of a committee of three." (C. G. Edwards, R. L. Moore and W. W. Butecow.)

The G. A. R. has complied with the report of your committee and it is now hoped that you will at once do the same, as the committee of which C. G. Edwards is chairman must make a final report to the department encampment G. A. R. at Minneapolis this winter, and would be sorry to report that your honorable society repudiated its committee and its debt of honor.

Burdick Post No. 3, therefore, respectfully asks that your society pay the sum of \$750 into the hands of the chairman of the committee (C. G. Edwards, of St. Paul) for the benefit of Geo. Knox and his family, and thus forever end the matter. Yours fraternally,

BURDICK POST, No. 3, G. A. R.

I. O. KILBURN, Post Commander.

GEO. W. WHITING, Post Adjutant.

Secretary Cross suggested that as there was ample means in the treasury now to liquidate this claim, that action be taken at this time by the society so that this matter may be settled.

Remarks were made by J. J. Furlong, John Cooper, N. P. Clarke and others. The opinion prevailed that the matter be settled.

On motion of N. P. Clarke and seconded by J. J. Furlong the following resolution was adopted:

*Resolved*, That the Minnesota State Agricultural Society pay out of any funds in the treasury not otherwise appropriated, the sum of seven hundred and fifty dollars (\$750) to C. G. Edwards, R. L. Moore, W. W. Butecow, Burdick Post No. 3, G. A. R., to be expended for the benefit of Geo. D. Knox, and his family, and that this amount cover all claims due from the Minnesota State Agricultural Society on behalf of the said Geo. D. Knox and his family.

General J. H. Baker moved that the name of Hon. D. M. Clough be added to the list of life members. Carried.

C. N. Cosgrove moved that the name of Dr. J. H. Murphy be added to the list of life members. Carried.

Also on motion the following names were referred to committee on life members: C. D. O'Brien, G. H. Hazzard, Dr. Chas. F. Konantz and Henry Schneider. The remaining members of the board of county commissioners, which voted to present the fair grounds to this society.

On motion the meeting adjourned.

W. F. CROSS, Secretary.

#### REPORT OF AUDITING COMMITTEE.

*To the Honorable Board of Managers of the Minnesota State Agricultural Society:*

Your auditing committee beg leave to make the following report:—

We have examined all bills and claims presented against the society and have approved the same, as shown per the attached list, made in detail, of said bills allowed.

W. M. LIGGETT,  
CLARKE CHAMBERS.

REPORT OF THE STATE BOARD OF AUDITORS, FOR THE YEAR ENDING  
DECEMBER 10, 1892.

*To the Honorable the Legislature of the State of Minnesota:*

Pursuant to Section 4, Chapter 181, of the General Laws of one thousand eight hundred and eighty-seven, the undersigned board, created by virtue of said act, hereby respectfully submits the following report of the financial transactions of the MINNESOTA STATE AGRICULTURAL SOCIETY for the year ending December 10, 1892, together with such other facts as we deem pertinent and bearing on the business affairs of the society:

WM. R. MERRIAM,  
MATT JENSEN,  
HENRY FEIG,  
THEODORE SANDERS.

REPORT OF THE STATE AGRICULTURAL SOCIETY FOR THE YEAR ENDING  
DECEMBER 10, 1892.

*Receipts.*

1891.		
Cash on hand, Dec. 10, 1891.....	\$10,551.76	
Ticket sales in 1891.....	333.00	
Cheese sales in 1891.....	34.33	
Swenson Bros., dining hall.....	100.00	
James Carr, stall rent.....	13.00	
E. M. Hallowell, rent.....	15.00	
S. H. Harrison, returned.....	13.80	
Total for 1891.....		\$11,060.89
1892.		
Nov. 7. Annual dues.....	\$73.00	
7. M. G. Thompson, privilege.....	60.00	
Forage.....	1.50	
May 4. James Carr, stall rent.....	4.00	
4. F. A. Seymour, stall rent.....	12.00	
June 9. James Carr, stall rent.....	15.00	
9. Stamps sold.....	1.50	
Interest on loan.....	120.00	
J. J. Wood, pasture.....	2.00	
J. Cullen, stall and pasture.....	64.00	
R. W. Zachon.....	27.65	
July 6. W. J. Scott, privilege.....	270.00	
6. A. D. Brown, pasture.....	3.00	
16. W. J. Scott, privilege.....	310.00	
18. M. V. B. Phillips, pasture.....	1.50	
C. D. Ruggel, privilege.....	10.00	
30. O. L. Rheame, pasture.....	12.00	
Aug. 4. State appropriation.....	4,000.00	
8. R. Reeves, pasture.....	8.00	
13. W. A. Maxwell, pasture.....	6.00	
M. V. B. Phillips, pasture.....	11.20	
Sept. 5. C. E. Wood, privilege.....	5.00	
5. S. B. Green returned check.....	3.00	
Geo. Sherwood, races.....	2.90	
W. L. Chappel, cheese.....	35.00	
Stalls and tickets.....	898.67	
Races.....	316.00	
Tickets.....	17,218.35	
D. E. Bailey, privileges.....	2,206.86	

Sept.	8.	Races.....	\$440.00
	5.	Breeders' races.....	1,500.00
		Privileges.....	70.50
		J. M. Walls, races.....	180.00
	9.	Tickets.....	2,651.40
	10.	J. M. Bayer, forage.....	585.68
	12.	Races.....	140.00
		Forage.....	150.00
		D. E. Bailey, privileges.....	450.00
		Tickets.....	2,833.25
Oct.		Forage.....	65.72
	21.	Minnesota Driving Club, rent.....	550.00
		David McKay, stalls.....	26.00
		David McKay, entrance.....	53.00
		Fletcher Bros., stalls.....	4.00
		Fletcher Bros., ticket.....	2.00
		F. C. Shipman, ticket.....	2.00
		Geo. S. Bicknell, ticket.....	4.00
		T. Irwin, forage.....	18.08
	2.	T. Irwin, stalls.....	10.00
		O. L. Rheames, pasture.....	12.00
		Robt. Deakin, hay.....	30.00
		Omaha R. R., tickets.....	718.50
		St. Paul Jobbers, tickets.....	579.50
		N. P. R. R., tickets.....	288.50
		Stall rent.....	30.00
		Entrance fees.....	53.00
		Tickets.....	8.00
		Balance tickets.....	847.45
		Balance stalls.....	261.46
		Balance entry fees.....	171.00
		St. Paul Jobbers, Nancy Hanks.....	500.00
		Check returned Mrs. Tankersley.....	8.00
		Suspensions.....	20.10
		Pasture.....	9.33
		Notes—officers' salaries.....	2,600.00
Total.....			\$52,918.98

*Disbursements.*

1891.

Dec.	12.	Wilcox Bros., premiums.....	\$22.50
		Leonard's transfer.....	25.00
		Printing. R. C. Judson, 1889.....	113.00
		Asst. Superintendent, D. E. Bailey, '91.....	100.00
		Assistant Dr. J. C. Curryer.....	265.00
		Assistant E. H. Harrison.....	13.80
		Permanent improvements, Rodger & Co.....	101.00
		Premiums, Jenny M. Wilson.....	10.00
	15.	Assistant A Post, '89.....	25.00
		Lawsuit, '91.....	177.70
	18.	Manager L. Cook.....	294.32
		Manager C. Chambers.....	253.82
		Manager C. N. Cosgrove.....	299.99
		Manager J. J. Furlong.....	248.05
		W. R. Tanner.....	264.05
		J. F. Norrish.....	265.00
Jan.	9.	W. Rodger & Co., repairs.....	49.55
		Lockwood & Allard, fuel.....	84.00
		Assistant W. L. Chappel <i>et al.</i> .....	37.00
		Assistant H. B. Hudson.....	10.00
		D. W. Harper.....	185.00
		J. W. Lucca.....	6.00



Jan.	30.	Burdick Post Knox, 1887.....	\$750.00
		Manager W. M. Liggett, 1891.....	250.00
Feb.	9.	Harris & Jones.....	37.95
March	21.	Premium Beets.....	60.00
		Premium, T. S. Moberly.....	300.00
		Premium, H. F. Brown.....	100.00
		Premium, N. P. Clarke.....	50.00
Sept.	10.	Premium, F. C. Pillsbury Estate.....	100.00
Total for 1891.....			\$4,314.58

## 1892.

Jan.	1.	State Auditors, H. Feig.....	\$15.00
		State Auditors, T. Sanders.....	10.00
		State Auditors, M. Jenson.....	10.00
	9.	Weymott & Howard.....	2.94
	30.	Pay roll.....	70.00
March	21.	Brooks Bros.....	23.76
		Lockwood & Allard.....	83.65
		M. Shelstad, labor.....	70.00
		American Express Co.....	7.55
		W. W. Campbell, ice.....	25.00
May	20.	Telephone.....	16.00
	30.	Butter Lost.....	32.57
		American Trotting Association.....	50.00
		W. Lindig, hay.....	9.00
June	2.	Sam. Partridge.....	300.00
July	1.	M. Shelstad <i>et al</i> .....	374.00
		Telephone.....	10.00
	22.	Farwell, Ozmun & Co.....	50.57
		Red Wing Sewer Pipe Co.....	57.75
	30.	Pay roll, main building.....	282.78
	22.	Joslin, Cudworth & Co.....	90.00
		Lockwood, Allard & Co.....	64.21
		Northwestern Telephone Co.....	20.00
		Shorthorn Breeders Association.....	79.25
Aug.	1.	J. I. C. Attraction.....	800.00
		W. F. Cross.....	11.24
Sept.	10.	Assistant superintendent, L. H. Prosser.....	25.00
		A. Lowell, watchman.....	15.00
		W. C. Hanke, watchman.....	15.00
		Ed. Newman, watchman.....	15.00
		M. B. Johnson, watchman.....	21.00
		J. F. McGinnes, watchman.....	12.00
		M. H. Shay, assistant.....	15.00
		A. E. Miller, watchman.....	16.00
		G. A. Cobb, assistant superintendent.....	30.00
		Gatekeeper's pay roll.....	391.25
		Ed. Weaver, expense.....	11.99
		W. E. Prichard, judge.....	100.00
	12.	L. Parlin, superintendent.....	50.00
		L. Parlin, forage.....	20.00
		F. L. Seixas, press agent.....	200.00
		Ticket seller's pay roll.....	290.00
		Nancy Hanks, attraction.....	2,500.00
		Mrs. Crossley <i>et al.</i> , superintendents.....	759.00
		Wm. Brenner, watchman.....	22.50
		Jack and Martha Wilkes.....	750.00
Sept.	13.	Labor pay roll.....	590.69
		Labor pay roll.....	950.00
Sept.	14.	C. Gantzer, labor.....	80.00
		J. M. Walls, assistant.....	50.00
		City of St. Paul, labor.....	47.00
Sept.	19.	Chamberlain, expense.....	123.67

Sept.	19.	Labor, July and August.....	\$374.87
		J. McDonald, labor.....	91.12
Sept.	28.	S. Partridge, salary.....	300.00
Sept.	30.	G. Stevens, salary.....	130.00
		W. F. Cross, salary.....	1,890.00
		James Bannister.....	53.08
Sept.	11.	Harris & Jones, team.....	40.00
		St. Paul Cartage Co.....	60.00
		St. Aubin & Dion.....	31.00
		J. P. West, superintendent.....	9.72
		Scribner-Libbey Co.....	13.97
		St. Paul Show Case Co.....	7.50
Sept.	30.	Standard Oil Co.....	7.78
Oct.	10.	Security warehouse.....	7.40
		H. P. Rugg & Co.....	26.93
		Wm. Rodger.....	3.50
		J. A. Lawrence <i>et al</i> .....	115.00
		Quinby & Abbott.....	7.00
		People's Ice Co.....	21.25
		N. W. Stamp Co.....	14.30
		N. W. Telephone.....	20.00
		Lynch & Schubert.....	3.00
		Lockwood & Allard.....	140.78
		A. W. Latham, superintendent.....	6.00
		A. W. Latham.....	12.25
		F. A. Leyde.....	70.82
		P. H. Kelly.....	12.50
		W. D. Harris.....	18.00
		Fort Snelling Band, attraction.....	420.00
		H. L. Foster.....	4.00
		Fairbanks, Morse & Co.....	2.50
		Adam Decker.....	15.90
		Cooper.....	9.00
		John A. Bayne.....	29.25
		Barbeau Transfer.....	60.00
		Allen, Moon & Co.....	30.00
		Twin City Lime Co.....	10.90
		F. J. Wilcox.....	29.10
		Robt. Deakin.....	30.00
		W. F. Cross, pay roll.....	404.75
		J. H. Burwell.....	37.15
		Mast, Buford & Burwell.....	150.91
		Mast, Buford & Burwell.....	3.80
		Wm. Roberts & Sons, ret.....	20.00
		D. W. Harper.....	1.00
		L. N. Scott.....	80.00
		Finch, Van Slyck & Co.....	157.21
		Crescent Creamery Co.....	117.00
		J. A. Lawrence.....	26.75
		J. A. Lawrence.....	78.75
		Joslin & Co.....	879.41
		Mary Partridge.....	18.00
		St. Paul Board Water Commissioners.....	35.00
		Hamline Supply Co.....	7.65
		Cornish, Curtis & Green.....	25.36
		D. E. Bailey.....	100.00
		Northwestern Telephone Co.....	10.00
Dec.	3.	J. B. Warren.....	10.00
		W. R. Morrison & Sanitation Co.....	5.40
		Meyers & Co.....	.75
		Northwestern Telephone Co.....	10.00
		W. W. Campbell.....	16.50
		M. Shelstad <i>et al</i> .....	141.25
		Geo. S. Bicknell.....	4.00

Dec. 6	Wm. Liggett.....	\$26.59
	J. H. Letson.....	20.80
	W. R. Tanner.....	41.20
	C. N. Cosgrove.....	26.72
	Sam Partridge.....	600.00
Dec. 13.	F. J. Wilcox.....	400.00
	H. G. Neal.....	40.00
	Dennis Murphy, assistant.....	50.00
	Advertising.....	4,176.94
	Postage.....	360.97
	Premiums.....	11,902.28
	Races.....	4,697.35
	Permanent improvements.....	8,149.84
Total.....		\$45,839.62
Paid for 1891.....		4,314.58
Salaries, in notes.....		2,600.00
Balance in treasury.....		164.78
Total.....		\$52,918.98

## RECAPITULATION.

FOR THE YEAR ENDING DEC. 10, 1892.

1891.

*Receipts.*

Cash on hand December 10th.....	\$10,551.76
Cash received from various sources.....	509 13

Total for 1891 and former years.....	\$11,060.89
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1892.

Balance on hand from 1891.....	\$6,746.31
Annual membership.....	73.00
State appropriation.....	4,000.00
Forage.....	819.48
Privileges.....	3,382.35
Pasture account and stalls.....	213.59
Stall rent during fair.....	812.07
Entry fees.....	277.00
Races, Breeders' stakes.....	1,790.00
Races.....	1,096.50
Suspensions.....	27.65
Ticket sales.....	25,548.95
St. Paul jobbers, Nancy Hanks.....	500.00
Interest on loan.....	120.00
Rent, driving club and superintendent.....	550.00
Sundry receipts.....	12.50
Cheese sold.....	35.00
Notes paid, salaries.....	2,600.00

Total.....	\$48,604.40
------------	-------------

1891.

*Disbursements.*

Cash paid as per vouchers.....	\$4,314.58
Balance on hand.....	6,746.31

Total.....	\$11,060.89
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1892.

Paid—Attractions.....	\$4,470.00
Advertising.....	4,176.94
Forage and fuel.....	1,197.05
Labor, repairs, etc.....	3,990.37
Officers.....	6,000.00
Postage, express, etc.....	368.52



Paid — Premiums.....	\$11,902.28
Races.....	4,697.35
Superintendent.....	1,708.60
Permanent improvements.....	8,149.84
Miscellaneous expenses.....	1,778.67
Cash in treasury.....	164.78
Total.....	\$48,604.40

## SUMMARY.

Cash in treasury, December, 1892.....	\$164.78
Accounts due society.....	1,048.00
Permanent improvement funds, 1892.....	1,403.56
Personal property funds, 1892.....	316 41
Total.....	\$2,932.75
Bills payable.....	\$2,830.35
Balance in favor 1892.....	102.40
Total.....	\$2,932.75

## SUMMARY OF TREASURER'S REPORT FOR 1892.

*Receipts.*

Balance on hand December 10, 1891.....	\$10,551.76
Annual membership fees.....	73.00
Annual state appropriation.....	4,000.00
Privileges.....	3,482.35
Forage.....	819 48
Pasture and stall rent.....	213.59
Stall rent.....	840.07
Entry fees.....	277.00
Races.....	1,076.40
Races, breeders.....	1,790.00
Races, suspensions.....	47.75
Ticket sales.....	25,881.95
St. Paul Jobbers' Union, Nancy Hanks.....	500.00
Interest.....	120.00
Rent, driving club.....	300.00
Premium returned.....	8.00
St. Paul Driving Club Supt.....	250.00
S. B. Green, returned.....	3.00
Cheese sold, 1891.....	34.35
Cheese sold, 1892.....	35.00
Stamps sold.....	1.50
Total.....	\$50,318.98
Disbursements.....	\$50,154.20
Balance.....	164.78
Total.....	\$50,318.98

## STATEMENT OF MONEY RECEIVED FOR PRIVILEGES DURING THE FAIR.

W. J. Scott, score card.....	\$580.00
W. J. Scott, mileage tickets.....	200.00
F. Heilroth.....	5.00
E. O. Nelson.....	5.00
C. F. Wood.....	15.00
F. Bowski.....	15.00
Sach & Bros.....	15.00
C. D. Ruggles.....	10.00

Nutting .....	\$50.00
Mrs. Lawley .....	15.00
E. L. Prichett .....	10.00
Hubbell ...	20.00
W. H. Jones .....	15.00
Phil Rehfish .....	15.00
R. C. Eagles .....	5.00
Mansfield .....	10.00
G. W. Thompson .....	70.00
Jacobson .....	10.00
W. J. Dunneback, grand stand .....	500.00
Pat Couley, pools .....	750.00
Dining hall, Mr. Harris, or meal tickets, \$101.65 .....	148.35
Epworth Church, lot for dining purposes .....	166.00
Methodist Alliance, lot for dining purposes .....	120.00
C. R. Chamberlain, lot for dining purposes .....	150.00
Ascension Church, lot for dining purposes .....	100.00
H. M. Barnett, ponies and fruit stand .....	35.00
New York Aquarium Car Co. ....	50.00
E. Janto, lemonade stand .....	10.00
M. Russe, fortune birds .....	5.00
George Peterman, six lots near sidewalk .....	120.00
P. Mainzer, two lots near sidewalk .....	50.00
H. C. Burrows, alligators .....	25.00
Lindberg & Stoneburg, merry-go-round .....	100.00
G. Gurenzing, lot .....	50.00
Truesdale, small notions .....	5.00
H. Austin, small notions .....	5.00
Green & Co., lot near sidewalk .....	28.00
Gumber & Co., lot near sidewalk .....	25.00
H. J. Lacorte, hitching horses .....	24.00
Vandely & Smith, lot near sidewalk .....	25.00
G. F. Evans, lot near sidewalk .....	25.00
Sloan & Co., sea cow .....	25.00
M. Keister, lemonade stand .....	10.00
G. Sannello, lemonade stand .....	10.00
S. H. Dickens & Co., lemonade stand .....	10.00
J. Mercier, cider .....	25.00
George Groff, lemonade stand .....	4.50
Snyder & Austin, riding gallery .....	50.00
Mrs. Kinning, lot near sidewalk .....	25.00
Biegle, Dalton & Co., Nancy Hanks pictures .....	20.00
J. F. Oakes, lot near sidewalk .....	25.00
J. Anderson, buttermilk .....	10.00

## REPORT OF ADMISSION TICKETS RECEIVED.

*To the Board of Managers Minnesota State Agricultural Society:*

GENTLEMEN:—I beg to submit the following report of tickets taken up at the gates during the last Fair, from September 5th to 10th inclusive:

C. N. COSGROVE, Superintendent of Gates.

36,486	General admission tickets at 50 cents each .....	\$18,243.00
1,895	Half fare tickets at 25 cents each .....	473.75
818	Season coupon tickets at 33 $\frac{1}{4}$ cents each .....	272.66
3,636	Railroad tickets at 50 cents each .....	1,818.00
17,565	Grand stand tickets at 25 cents each .....	4,391.25
701	Grand stand tickets, reserved, at 50 cents each .....	350.50
61,101	Total value .....	\$25,549.16







CLEVELAND BAY STALLION, "ROYALTY" (128). SIRE, PRINCE OF WALES (371); SIRE OF DAM GAIEITY (170).  
OWNED BY GREEN MOUNTAIN STOCK RANCHING CO., H. E. FLETCHER, PRESIDENT, MINNEAPOLIS.

## TICKETS RECEIVED EACH DAY.

DAYS.	General admission.	Half fare.	Season coupons.	Railroad.	Grand stand.	Grand stand, reserved.	Total.	Half fare tickets.	Half fare coupons.	One day passes.
Monday.....	689	102	89	65	.....	32	945	104	93	.....
Tuesday.....	2,638	158	176	309	618	32	3,931	236	313	.....
Wednesday.....	19,951	966	216	1,761	12,071	306	35,271	370	335	43
Thursday.....	8,753	424	173	944	3,577	331	14,202	221	354	55
Friday.....	4,455	245	164	557	1,299	32	6,752	318	236	25
Total.....	36,486	1,995	818	3,636	17,565	701	61,121	1,249	1,331	111

## RECAPITULATION.

Received at outside gates .....	45,538
Received at grand stand.....	18,266
	63,804

## RAILROAD COUPON TICKETS.

## RECEIVED FROM VARIOUS RAILROADS.

DAYS.	Chi. St. Paul, Minneapolis & Omaha.	Great Northern.	Northern Pacific.	St. Paul & Duluth.	Soo.	D., S. S. & A. t.	Total.
Monday.....	41	9	9	6	.....	.....	65
Tuesday.....	126	85	30	46	17	5	309
Wednesday.....	690	435	329	190	113	4	1,761
Thursday.....	559	241	140	119	85	.....	944
Friday.....	223	156	69	85	24	.....	557
Total.....	1,439	925	577	446	239	9	3,636

*Receipts.*

Races and grand stand.....	\$7,628.25
Paid in purses and stakes.....	\$4,697.35
Paid for Nancy Hanks.....	2,500.00
Paid for Jack and Martha Wilkes.....	750.00
Paid for J. I. C.....	800.00
Total cost.....	\$8,747.35
Less entries and grand stand.....	7,628.25
Net.....	\$1,119.10
Less subscription from St. Paul Jobbers Union.....	500.00
Net cost races and attractions.....	\$619.10

*Disbursements.*

## EXHIBIT A.

## SPECIAL ATTRACTIONS.

Nancy Hanks .....	\$2,500.00
J. I. C.....	800.00
Jack.....	375.00
Martha Wilkes .....	375.00
Band .....	420.00
Total .....	\$4,470.00

## EXHIBIT B.

## PRINTING.

Brown & Treacy .....	\$62.70
Red Wing Printing Co.....	99.46
F. L. Sirxas.....	17.50
Pioneer Press Co.....	240.25
Dispatch Printing Co.....	29.00
Brown & Treacy.....	239.28
Price, McGill & Co.....	635.25
Joel P. Heatwole .....	10.00
Total.....	\$1,333.44

## EXHIBIT C.

## ADVERTISING.

St. Paul Globe.....	\$230.50
Minneapolis Tribune.....	421.30
Pioneer Press.....	255.00
St. Paul Dispatch .....	236.75
Minneapolis Journal.....	249.00
Minneapolis Times.....	258.50
St. Paul Daily News.....	183.00
Farm, Stock and Home.....	125.00
N. W. Agriculturist .....	50.00
N. W. Farmer and Breeder .....	50.00
Die Volkszeitung .....	30.00
Hotel News.....	15.00
Skordemannen.....	10.00
Svenska Folkets Tidning.....	16.50
Nordvesken .....	10.00
Programme Publishing Co.....	5.00
Anoka County Union.....	18.00
Tidende .....	16.50
Breeders' Gazette.....	15.00
L. N. Scott Programme Co .....	25.00
Scandinavisk Farmer Journal .....	25.00
Wisconsin Farmer.....	10.00
Total.....	\$2,255.05

## EXHIBIT D.

## LABOR AND REPAIRS.

M. Shilstad, pay roll.....	\$70.00
M. Shilstad, pay roll.....	70.00
M. Shilstad <i>et al.</i> .....	374.00
Pay roll, repairing main building.....	282.78
Pay roll, labor during fair .....	590.69
Pay roll, assistants during fair.....	950.00
C. Gantzer, cleaning barns during fair.....	80.00
J. McDonald, carpenter.....	91.12
Pay roll, labor.....	374.87
Jos. Bannister, whitewashing.....	53.08
M. F. Cross, pay roll during fair.....	404.75
M. Shilstad <i>et al.</i> , labor.....	141.25
Total.....	\$3,482.54



## EXHIBIT E.

## PREMIUMS PAID.

Division A—Horses.....	\$2,585.00
Division B—Cattle.....	4,590.00
Division C—Sheep.....	936.00
Division D—Swine.....	845.00
Division E—Poultry.....	396.00
Division F—Dairy.....	456.20
Division G—Apiarian.....	277.00
Division H—Household Fabrics.....	432.50
Division J—Fruits and Flowers.....	777.00
Division K—Vegetables.....	520.00
Division L—Domestic Stores.....	195.00
Total.....	\$12 009.70

There is a difference between the above amount and the report December 10th, 1892. This is owing to protests of awards made during the fair and settled since.

## EXHIBIT F.

## PERMANENT IMPROVEMENTS.—PAINTING.

J. L. Cosgrove, oil.....	\$86.36
Pay roll, painters.....	372.10
Pay roll, painters.....	367.09
Pay roll, painters.....	414.24
Pay roll, painters.....	98.00
Noyes Bros. & Cutler, paint.....	863.09
T. L. Blood & Co., paint.....	100.29
Geo. H. Davis, painter.....	9.50
Pay roll, painters.....	279.91
Pay roll, painters.....	103.40
Adolph Rank, painter.....	65.75
Noyes Bros. & Cutler.....	92.45
Total.....	\$2,852.18

## GRADING STREETS AND WALKS.

P. Peteler, landscape drawing.....	\$50.00
P. Peteler, landscape gardener.....	100.00
Pay roll, grading.....	1,137.55
Pay roll, grading.....	1,117.98
Pay roll, grading.....	283.05
Pay roll, grading.....	214.95
Pay roll, grading.....	330.05
Total.....	\$3,233.58

## TREES.

Labette, trees.....	\$46.80
Freight, trees.....	17.00
C. Farnham, trees.....	40.00
Freight, trees.....	18.00
L. Edlefson, trees and shrubs.....	132.75
W. Larson, trees.....	173.10
P. Peteler, trees.....	51.83
Experimental station trees.....	21.85
Total.....	\$501.33

## MISCELLANEOUS.

Clough Bros., Lumber.....	\$186.82
Brooks Bros., lumber.....	239.15
Clark, use of scrapers..	12.50
Swanson, window.....	25.00
Scribner, Libby & Co.....	30.00
H. P. Rugg & Co.....	60.00
F. G. McMillan, supervising architect.....	300.00
Charles T. Leonard.....	11.00
Farwell, Ozman & Co.....	57.44
Adam Decker.....	39.34
Jas. H. Bishop.....	4.50
Mast, Buford & Burwell, fence.....	591.90
McClellan Bros.....	5.10
Total.....	\$1,562.75
Total permanent improvements .....	\$8,149.84

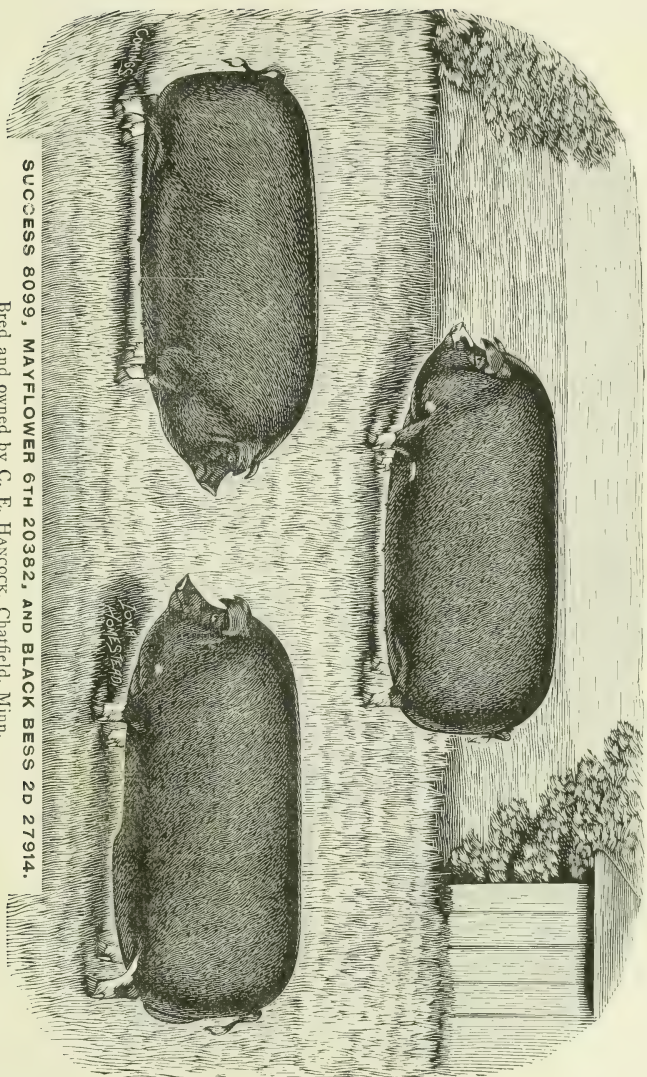
We present herewith a group of Poland Chinas, a part of our show herd that have been shown successfully at the fairs. The Poland China hog is almost too well known to need any introduction. It is not like most other breeds of stock, of English origin, but is purely an American product, having originated and been brought to its high standard of perfection in the United States. Its merits have won its success with the American farmer. It has also been exported and successfully raised in other countries. It is of a kind and quiet disposition, a quiet feeder, and when fed until satisfied will rest quietly until next feeding time, and for that reason is a great meat producer. It has the habit of taking on flesh very rapidly with ordinary feeding, and is always ready for market from the time when he is a little roaster until he is the prime, heavy hog of the Chicago market, fetching the highest market price and weighing from 500 to 800 lbs. at maturity, some of the coarser specimens reaching over 1,000 lbs. weight.

The sows are noted for carefulness and productiveness in rearing young, very frequently farrowing from eight to fifteen pigs to a litter, and raising a large per cent. of them. The young porker is known by his nearly black body, with perhaps a spot or two on the body, four white feet and a white tip on his tail, his neat head and drooping ears, broad shoulders, back and hams, good length of body and great depth of carcass on a good set of limbs capable of carrying him to market.

In fact he is the ideal farmer's hog, as shown by his popularity, there being at least 75 per cent. of all the hogs raised in the United States of the breed and its crosses. Other breeds have come and almost gone out of existence, but the Poland China has come to stay.

The Poland China is a great pork producer on a grass and clover pasture. Turned into a good clover or grass pasture they will lay on a good coat of meat with nothing else only plenty of pure water to drink and a protection from the sun and storms. There is no kind of stock, taking one year with another, on the farm that is so profitable as the good Poland China of to-day.

C. E. HANCOCK,  
Chatfield, Minn.



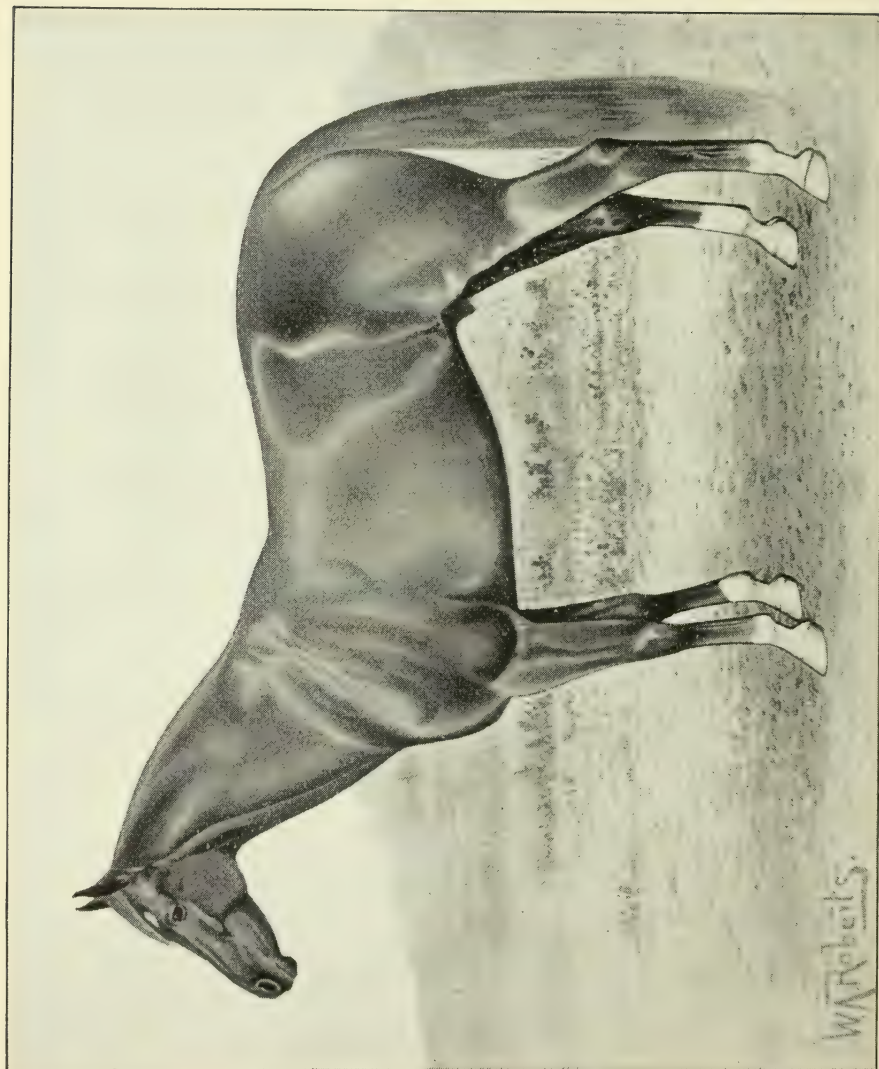
**SUCCESS 8099, MAYFLOWER 6TH 20382, AND BLACK BESS 2D 27914.**

Bred and owned by C. E. Hancock, Chaffield, Minn.



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THE INTERIOR





"LOCKHEART" BY NUTWOOD; DAN RAPIDAN BY DICTATOR. OWNED BY GEORGE W. SHERWOOD  
ST. PAUL, MINN.



## EXHIBIT G.

## PREMIUMS AND AWARDS.

Premiums and awards.....\$4,585.00

## DIVISION A.—HORSES AND MULES.

CLARKE CHAMBERS, Superintendent, Owatonna.

JOHN BYERS, Assistant Superintendent, Hastings.

A. CARLSON, Judge of Class 1 to 6.

W. E. PRITCHARD, Judge of Classes 7 to 20.

## CLASS 1.—THOROUGHBREDS.

	1st prem.
Stallion, four years or over, H. R. Shrimpton, St. Paul.....	\$20.00
Stallion, one year old, and under two, Deakin Bros., Macalaster...	15.00
Mare, four years or over, Deakin Bros., Macalaster.....	20.00

## CLASS 2.—TROTTING STRAINS, STANDARD BRED AND REGISTERED.

	1st prem.	2d prem.
Stallion, four years or over, W. C. Colbrath, Minneapolis..	\$25.00	
Stallion, four years or over, Michael Kennedy, Mendota..		\$15.00
Stallion, four years or over, C. D. Andrews, St. Paul...	Third	5.00
Stallion, two years and under three, H. W. Pratt & Watson Co., Minneapolis.....	15.00	
Stallion, two years and under three, J. LeDue, Lu Verne.		10.00
Stallion, two years and under three, H. W. Phelps, Minneapolis.....	Third	5.00
Stallion, one year old and under two, F. H. Colby, Minneapolis.....	15.00	
Stallion, one year old and under two, Wm. Bolten, Combe.		10.00
Mare, four years old or over, A. C. Bruce, Minneapolis...	20.00	
Mare, two years old and under three, F. H. Colby, Minneapolis.....	15.00	
Mare, one year old and under two, F. H. Colby, Minneapolis.....	15.00	

*Sweepstakes.*

For stallion, any age, W. C. Colbrath, Minneapolis.....	50.00	
For stallion, any age, Michael Kennedy, Mendota.....		25.00
For colts, four in number, of either sex, any age, the get of one stallion; the sire not required to be shown; the colts not necessarily owned by the exhibitor, A. C. Bruce, Minneapolis.....	25.00	
For colts, two in number, of either sex, any age, the produce of one mare; the colts not necessarily owned by the exhibitor, F. H. Colby, Minneapolis.....	15.00	

## CLASS 3.—TROTTING STRAINS NOT ELIGIBLE TO REGISTRY.

Stallion, four years or over, C. P. Gove, Anoka.....	20.00	
Stallion, four years or over, C. P. Gove, Anoka.....		15.00
Stallion, three years and under four, C. P. Gove, Anoka	15.00	
Stallion, three years and under four, C. P. Gove, Anoka.		10.00
Stallion, two years and under three, F. H. Colby, Minneapolis.....	15.00	

	1st prem.	2d prem.
Stallion, two years and under three, Wm. F. Giriten North Minneapolis.....		\$10.00
Stallion, one year and under two, A. C. Bruce, Minneapolis.....	\$15.00	
Stallion, one year and under two, J. N. Hawkins, Minneapolis.....		10.00
Mare, four years old and over, A. C. Bruce, Minneapolis..	20.00	
Mare, four years old and over, C. P. Gove, Anoka.....		15.00.
Mare, three years and under four, C. P. Gove, Anoka	15.00	
Mare, two years and under three, C. P. Gove, Anoka	15.00	
Mare, two years and under three, A. C. Bruce, Minneapolis .....		10.00
Mare, one year and under two, C. H. Card, Anoka.....	15.00	
Mare, one year and under two, C. P. Gove, Anoka.....		10.00

*Sweepstakes.*

For stallion, any age, C. P. Gove, Anoka.....	50.00	
For stallion, any age, J. N. Hawkins, Minneapolis.....		25.00

## CLASS 4.—ROADSTERS.

Single mare or gelding, F. H. Colby, Minneapolis.....	10.00	
Single mare or gelding, Elias Moses, Minneapolis.....		5.00

## CLASS 5.—CARRIAGE TEAMS, SINGLE GELDINGS OR MARES.

(Stallions excluded.)

Carriage team, matched and mated, owned by exhibitor, C. D. Andrews, St. Paul, diploma and.....	10.00	
Single gelding or mare, C. D. Andrews, St. Paul, diploma and.....	10.00	
Single gelding or mare, Elias Moses, Minneapolis.....		5.00

## CLASS 6.—SADDLE HORSES.

No Awards.

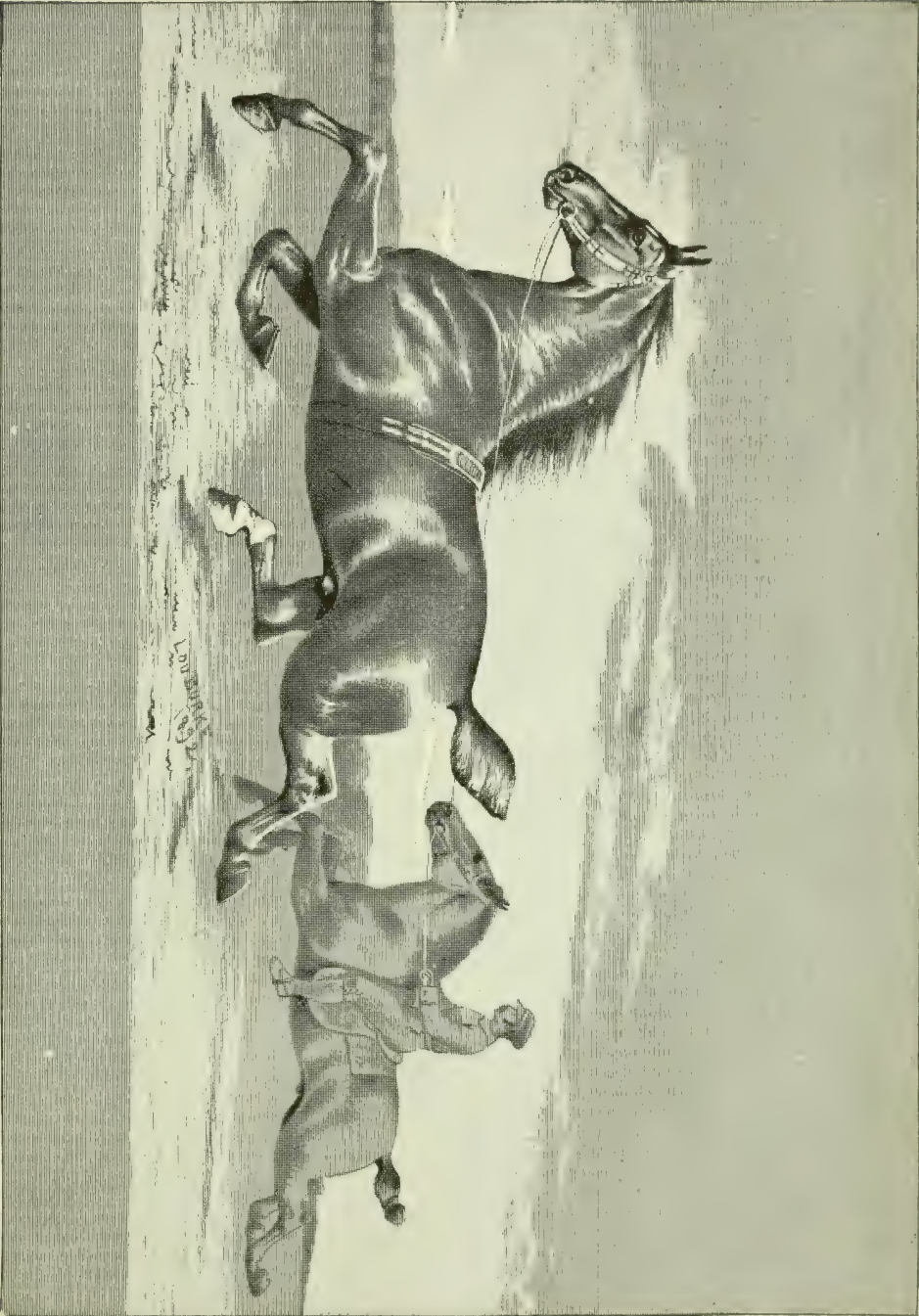
## CLASS 7.—CLEVELAND BAY, ENGLISH COACH, ENGLISH HACKNEY, CAB AND OTHER COACH HORSES.

Stallion, four years or over, W. H. Charlton, Minneapolis	25.00	
Stallion, four years or over, Galbraith Bros., Janesville...		15.00
Stallion, four years or over, N. P. Clarke, St. Cloud.....	Third	5.00
Stallion, three years and under four, W. M. Fields & Bro.	15.00	
Stallion, three years and under four, W. M. Fields & Bro.		10.00
Stallion, three years and under four, W. M. Fields & Bro.	Third	5.00
Stallion, two years and under three, Galbraith Bros., Janesville.....	15.00	
Stallion, one year and under two, W. H. Charlton, Minneapolis.....	15.00	
Mare, four years or over, W. M. Feilds & Bro., Cedar Falls, Iowa.....	20.00	
Mare, four years or over, W. M. Fields & Bro., Cedar Falls, Iowa.....		10.00
Mare, one year and under two, W. M. Fields & Bro., Cedar Falls, Iowa.....	15.00	

*Sweepstakes.*

For stallion, of any age, W. H. Charlton, Minneapolis...	50.00	
For stallion, of any age, W. M. Fields & Bro., Cedar Falls, Iowa.....		25.00

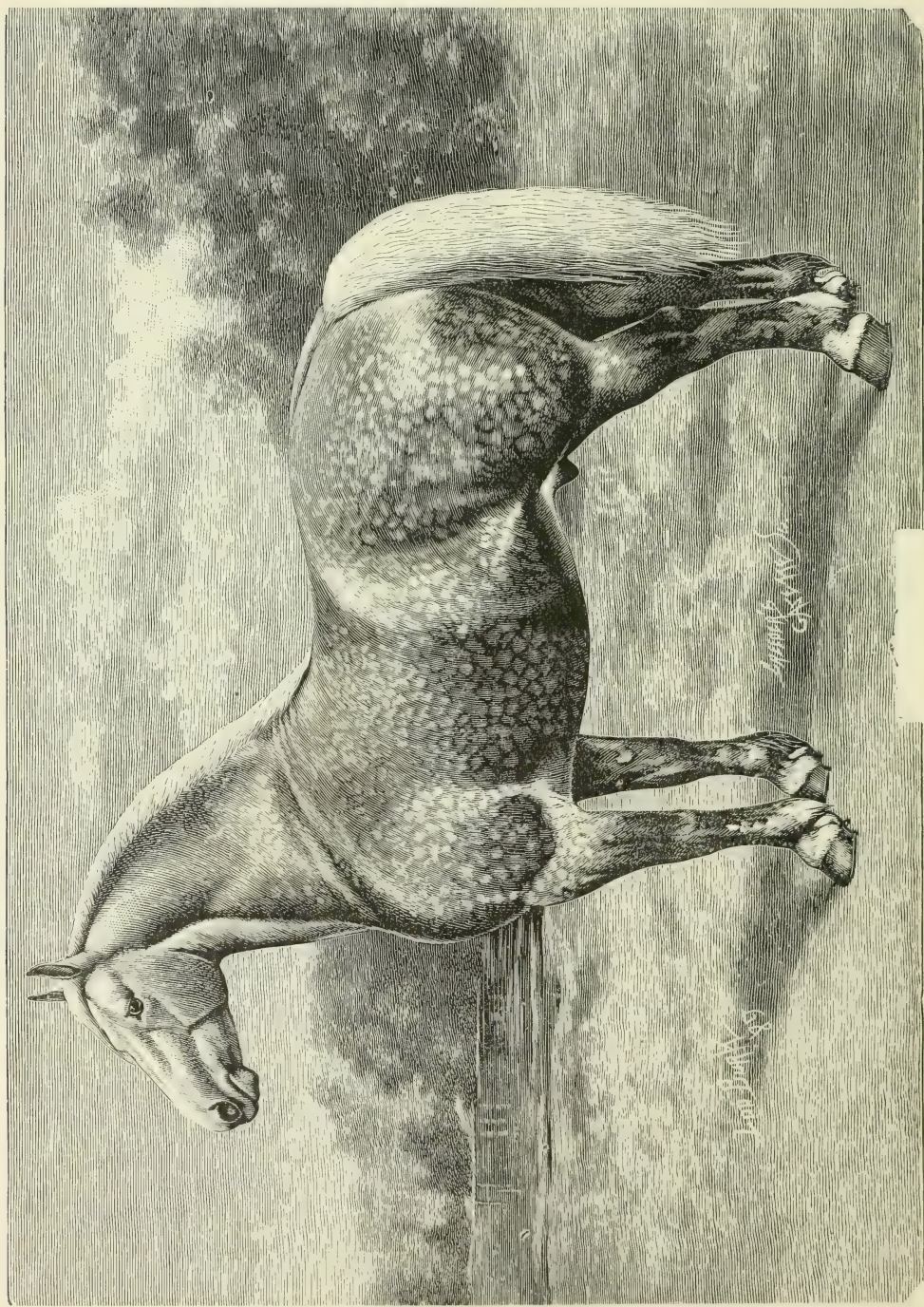
"YOUNG PHENOMENON" (278) 70 A. H. S. B. A. S. B. BLACK; FOALD 1881. SIRE YOUNG PERFECTION (278); DAM BY PHENOMENON II, 223. OWNED AND IMPORTED BY W. L. FIELDS & BRO., CEDAR FALLS, IOWA.





UNIVERSITY OF  
MICHIGAN  
LIBRARY

ALBANY, N. Y.  
JAN. 10, 1881.



"GILBERT" 5154 (461). [RECORDED WITH PEDIGREE IN THE PERCHERON STUD-BOOKS OF FRANCE AND AMERICA]. GREY; 16 $\frac{1}{2}$  HANDS; WEIGHT, 2,650 LBS.; FOAMED MARCH, 1882; IMPORTED 1886; BRED BY M. SHALOT, COMMUNE OF CETON, CANTON OF THEIL, DEPARTMENT OF ORNE; GOT BY BRILLIANT 1271 (755); DAM SOPHIE (7694) BY FAVORA 666 (725). OWNED BY LEONARD JOHNSON, NORTHFIELD, MINN.



## CLASS 8.—FRENCH AND GERMAN COACH.

	1st prem.	2d prem.
Stallion, four years old or over, E. Knott & Co., Waverly, Iowa.....	\$25.00	
Stallion, four years old or over, L. Johnson, Northfield....		\$15.00
Stallion, four years old or over, E. Knott & Co., Waverly, Iowa.....	Third	5.00
Stallion, three years and under four, E. Knott & Co., Waverly, Iowa.....	15.00	
Stallion, three years and under four, J. O. Billings, Fergus Falls.....		10.00
Stallion, three years and under four, T. L. and J. L. Delaney, Northfield.....	Third	5.00
Stallion, two years and under three, L. Johnson, Northfield.....	15.00	
Mare, one year old and under two, L. Johnson, Northfield.....	15.00	
Mare, one year old and under two, L. Johnson, Northfield.....		10.00
<i>Sweepstakes.</i>		
For stallion, of any age, E. Knott & Co., Waverly, Iowa...	50.00	
For stallion, of any age, L. Johnson, Northfield.....		25.00

## CLASS 9.—IMPORTED AND NATIVE PURE BRED PERCHERON.

Stallion, four years or over, Elias Pederson, Norway, Iowa.....	30.00	
Stallion, four years or over, T. L. and J. L. Delancy, Northfield.....		20.00
Stallion, four years or over, T. L. and J. L. Delancy, Northfield.....	Third	10.00
Stallion, three years and under four, H. A. Briggs, Elkhorn, Wis.....	20.00	
Stallion, three years and under four, L. Johnson, Northfield.....		15.00
Stallion, three years and under four, J. O. Billings, Fergus Falls.....	Third	5.00
Stallion, two years and under three, T. L. and J. L. Delancy, Northfield.....	15.00	
Stallion, two years and under three, J. O. Billings, Fergus Falls.....		10.00
Stallion, two years and under three, H. A. Briggs, Elkhorn, Wis.....	Third	5.00
Stallion, one year and under two, H. A. Briggs, Elkhorn, Wis.....	15.00	
Stallion, one year and under two, H. A. Briggs, Elkhorn, Wis.....		10.00
Mare, four years or over, L. Johnson, Northfield.....	25.00	
Mare, four years or over, T. L. & J. L. Delancy, Northfield.....		15.00
Mare, four years or over, H. A. Briggs, Elkhorn, Wis....	Third	5.00
Mare, three years and under four, T. L. & J. L. Delancy, Northfield.....	20.00	
Mare, three years and under four, H. A. Briggs, Elkhorn, Wis.....		15.00
Mare, three years and under four, L. Johnson, Northfield.....	Third	5.00
Mare, two years and under three, T. L. & J. L. Delancy, Northfield.....	15.00	
Mare, two years and under three, L. Johnson, Northfield.....		10.00
Mare, two years and under three, H. A. Briggs, Elkhorn, Wis.....	Third	5.00
Mare, one year and under two, L. Johnson, Northfield.....	15.00	
Mare, one year and under two, L. Johnson, Northfield.....		10.00

1st prem. 2d prem.

*Sweepstakes.*

For stallion of any age, Elias Pederson, Norway, Iowa,..	\$50.00	
For stallion of any age, H. A. Briggs, Elkhorn, Wis....		\$25.00

## CLASS 10.—IMPORTED AND NATIVE PURE BRED FRENCH DRAFT.

Stallion, four years or over, Francis Davis & Son, Goodhue.....	30.00	
Stallion, four years or over, T. L. & J. L. Delancy, Northfield.....		20.00
Stallion, three years and under four, G. M. Hughes, St. Paul.....	20.00	
Stallion, three years and under four, T. L. & J. L. Delancy, Northfield.....		15.00
Stallion, two years and under three, J. O. Billings, Fergus Falls.....	15.00	
Stallion, two years and under three, J. O. Billings, Fergus Falls.....		10.00
Stallion, two years and under three, T. L. & J. L. Delancy, Northfield.....	Third	5.00
Mare, four years or over, T. L. & J. L. Delancy, Northfield.....	25.00	

*Sweepstakes.*

For stallion of any age, Francis Davis & Son, Goodhue.....	50.00	
For stallion of any age, T. L. & J. L. Delancy, Northfield*.....		25.00

## CLASS 11.—CLYDESDALE.

Stallion, four years or over, Galbraith Bros., Janesville, Wis.....	30.00	
Stallion, four years or over, N. P. Clarke, St. Cloud....	Third 10.00	20.00
Stallion, four years or over, John Zelch, Cottage Grove..	Commended.	
Stallion, three years and under four, Galbraith Bros., Janesville, Wis.....	Third 5.00	20.00
Stallion, three years and under four, N. P. Clarke, St. Cloud.....		15.00
Stallion, two years and under three, N. P. Clarke, St. Cloud.....	Third 5.00	15.00
Stallion, two years and under three, Galbraith Bros., Janesville, Wis.....		10.00
Stallion, one year and under two, N. P. Clarke, St. Cloud..	15.00	10.00
Mare, four years or over, N. P. Clarke, St. Cloud.....	25.00	
Mare, three years and under four, N. P. Clarke, St. Cloud.	20.00	15.00
	Third	5.00
Mare, two years and under three, N. P. Clarke, St. Cloud.	15.00	10.00
Mare, one year and under two, N. P. Clarke, St. Cloud.	15.00	

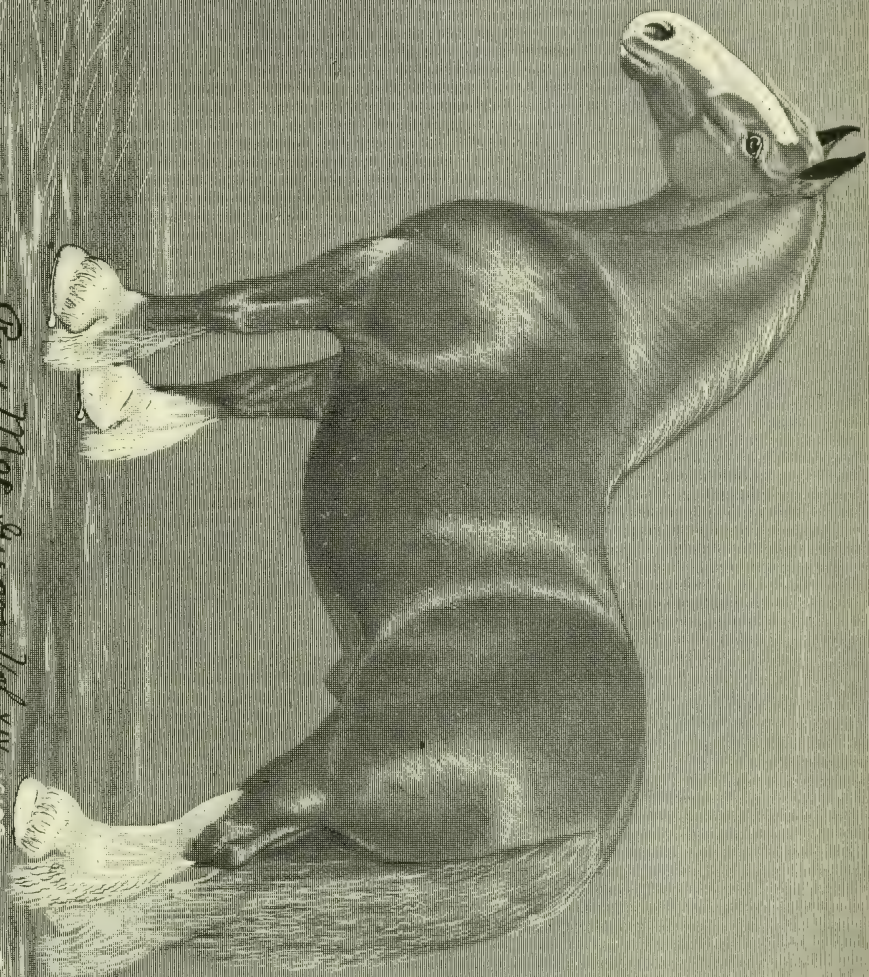
*Sweepstakes.*

For stallion, of any age, Galbraith Bros., Janesville, Wis	50.00	
For stallion, of any age, N. P. Clarke, St. Cloud.....		25.00

## CLASS 12.—ENGLISH SHIRE.

Stallion, four years or over, W. M. Fields & Bro., Janesville, Wis.....	25.00	
Stallion, four years or over, Galbraith Bros., Janesville, Wis.....	Third 5.00	15.00
Stallion, three years and under four, W. H. Charlton, Minneapolis.....	15.00	
Stallion, three years and under four, G. M. Hughes, St. Paul		10.00
Stallion, three years and under four, W. M. Fields & Bro., Cedar Falls, Ia.....	Third	5.00





*waistcoat*

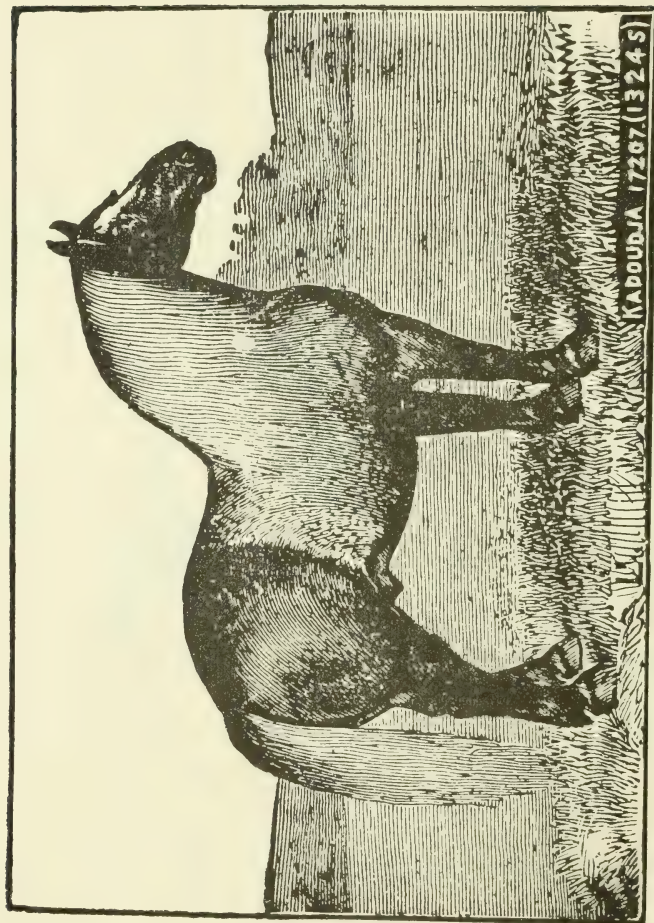
*Ross Mac Gregor Vol. XV. 6193.*

"ROSS MACGREGOR" 6183. [RECORDED IN VOL. VII, AMERICAN CLYDESDALE STUD-BOOK]. BAY, WHITE FACE, OFF LEGS WHITE, NEAR-FORE FOOT PARTLY WHITE. FOALD MAY 10, 1890; SIRE, MACGREGOR #930 (1857). DAM, JESS (236). BREED BY JAMES FINN AY KIRKPATRICK, SCOTLAND. INTRODUCED AMERICAN BRED BY JAMES FINN AY KIRKPATRICK, SCOTLAND.





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"KADODJA" 17207 (13245). BLACK GREY STALLION. FOALD MARCH 27, 1887. SIRE, GILBERT (JOHNSON'S) 5154 (461). DAM, CHOLON 7020 BY BRILLIANT 271 (555). OWNED AND IMPORTED BY JOHN ZELCH, COTTAGE GROVE, MINN.



	1st prem.	2d prem.
Stallion, two years and under three, G. M. Hughes, St. Paul.....	\$15.00	\$10.00
Stallion, one year and under two, G. M. Hughes, St. Paul..	15.00	
Mare, four years or over, W. M. Fields & Bros., Cedar Falls, Iowa.....	20.00	
Mare, three years and under four, W. H. Charlton, Mpls..	15.00	
Mare, one year and under two, W. M. Fields & Bros., Cedar Falls, Iowa.....	15.00	

*Sweepstakes.*

For stallion, of any age, W. M. Fields & Bros., Cedar Falls, Iowa.....	50.00	
For stallion, of any age, Galbraith Bros., Janesville, Wis.		25.00

## CLASS 13.—BELGIAN AND SUFFOLK PUNCH.

Stallion, four years or over, E. Knott & Co., Waverly, Ia.	25.00	
Stallion, two years and under three, E. Knott & Co., Waverly, Iowa.....	15.00	

*Sweepstakes.*

For stallion, of any age, E. Knott & Co., Waverly, Iowa..	50.00	
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## CLASS 14.—GRAND STALLION SWEEPSTAKES.

Registered draft stallion, any breed, showing four or more of his get, N. P. Clarke, St. Cloud.....	100.00	
Registered draft stallion, any breed, showing four or more of his get, H. A. Briggs, Elkhorn, Wis.....		50.00

## CLASS 15.—GRAND SWEEPSTAKES.

No awards.

## CLASS 16.—FARMERS' SWEEPSTAKES.

(Importers, breeders and dealers of imported stock, barred.)

Registered draft stallion, any age or breed, owned in Minnesota, having served at least twenty mares in the state during 1892, E. S. St. Martin, Bloomington.....	30.00	
Registered draft stallion, any age or breed, owned in Minnesota, having served at least twenty mares in the state, during 1892, Francis Davis & Sons, Goodhue.....		20.00

## AGRICULTURAL CLASSES—GRADES.

## CLASS 17.—PERCHERON AND FRENCH DRAFT.

Brood mare, John Zelch, Cottage Grove.....	20.00	
Filly, three years or over, T. L. & J. L. Delancy, Northfield.....	15.00	
Filly, two years and under three, H. A. Briggs, Elkhorn, Wis.....	15.00	
Filly, two years and under three, E. S. St. Martin, Bloomington.....	Third 5.00	10.00
Filly, one year and under two, E. St. Martin, Bloomington.....	Third 5.00	15.00
Filly, one year and under two, John Zelch, Cottage Grove.....		10.00

## CLASS 18.—CLYDESDALE AND ENGLISH SHIRE.

No entries.

SWEEPSTAKES.

	1st prem.	2d prem.
Pair of stallions or mares, or mare and gelding, weighing 3,000 lbs. or over, to be shown in harness to wagon, John Zelch, Cottage Grove.....	\$40.00	
Grade mare, any age, showing two of her foals, John Zelch, Cottage Grove.....	25.00	

CLASS 19.—PONIES,

(Not to exceed 13 hands high.)

Herd of ponies, five or more, owned by one individual Fletcher Bros., Minneapolis.....	25.00	
Herd of ponies, five or more, owned by one individual James Alderson, Merriam Park.....		15.00

CLASS 20.—JACKS AND MULES.

No entries.	
Total.....	\$2,585.00

EXHIBIT H.

DIVISION B.—CATTLE.

Premiums awarded.....	\$4,590.00
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W. M. LIGGETT, Benson, Superintendent.

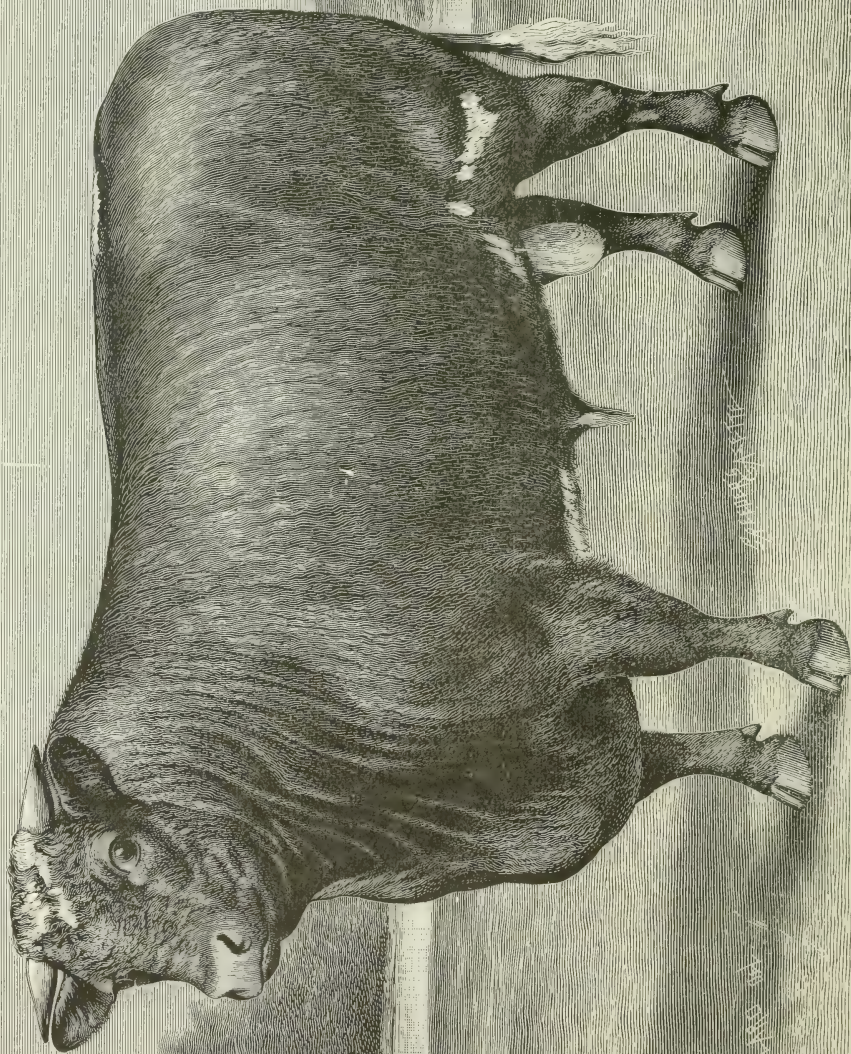
R. M. HAMAR, } H. J. FLUCK, } THOS. SHAW, }	Judges of classes 21, 22 and 23.
H. J. FLUCK, } W. M. CURTIS, }	Judge of classes 24 and 25.
W. M. CURTIS, } THOS. SHAW, }	Judge of classes 26 and 27.
W. M. CURTIS, } THOS. SHAW, }	Judges of classes 28, 29 and 37.
W. M. CURTIS, } THOS. SHAW, }	Judges of classes 34 to 39.
R. M. HAMAR, } H. J. FLUCK. }	

CLASS 21.—SHORTHORN.

Bull, three years or over, H. F. Brown, Minneapolis.....	\$20.00	
Bull, three years or over, Geo. W. Lyle, Monroe, Iowa....		\$15.00
Bull, two years and under three, H. F. Brown, Minneapolis .....	15.00	
Bull, one year and under two, H. F. Brown, Minneapolis.	15.00	10.00
Bull calf, under one year and over four months, H. F. Brown, Minneapolis .....	15.00	10.00
Cow, three years or over, H. F. Brown, Minneapolis.....	20.00	
Cow, three years or over, Geo. W. Lyle, Monroe, Ia.....		15.00
Cow, three years or over, G. W. Lyle, Monroe, Ia.....	Commended.	
Heifer, two years and under three, H. F. Brown, Minneapolis.....	15.00	
Heifer, two years and under three, Geo. W. Lyle, Monroe, Ia.....		10.00
Heifer, one year and under two, Geo. W. Lyle, Monroe, Ia	15.00	
Heifer, one year and under two, H. F. Brown, Minneapolis		10.00
Heifer calf, under one year and over four months, H. F. Brown, Minneapolis.....	10.00	
Heifer calf, under one year and over four months, Geo. W. Lyle, Monroe, Ia.....		5.00

100





**EARL FAME.**

SHORTHORN BULL. "EARL FAME 8TH" NOW WEIGHS 2900. SIRE, BARON WARLABY 7878, DAM, FAME 7TH BY 8TH DUKE OF VINEWOOD 2445, TRACING HIS PEDIGREE TO IMP. FILIGREE, BY ABRAM PARKER 9876.  
 EARL FAME 8TH headed the Brownedale herd at the five largest fairs in the United States last fall, and the herd was victorious at them all, taking away blue ribbon and sweepstakes, save one red. The herd will be on exhibition at the World's Fair at Chicago next season, 25 strong. Owned by H. BROWN, MINNEAPOLIS, MINN.

# HERDS.—OWNED BY EXHIBITORS.

No entries.

## CLASS 22.—HEREFORD.

	1st prem.	2d prem.
Bull, three years or over, Cosgrove Live Stock Co., LeSueur	\$20.00	
Bull, two years and under three, Thos. Clark, Beecher, Ill	15.00	
Bull, two years and under three, Cosgrove Live Stock Co., LeSueur.....		\$10.00
Bull, one year and under two, H. J. Fluck, Goodenow, Ill.	15.00	
Bull, one year and under two, Cosgrove Live Stock Co., LeSueur.....		10.00
Bull calf, under one year and over four months, Cosgrove Live Stock Co., LeSueur.....	15.00	
Bull calf, under one year and over four months, Thos. Clark, Beecher, Ill.....		10.00
Cow, three years or over, Cosgrove Live Stock Co., LeSueur	20.00	15.00
Heifer, two years and under three, Thos. Clark, Beecher, Ill.....	15.00	10.00
Heifer, one year and under two, Cosgrove Live Stock Co., LeSueur.....	15.00	10.00
Heifer calf, under one year and over four months, Thos. Clark, Beecher, Ill.....	10.00	
Heifer calf, under one year and over four months, H. J. Fluck, Goodenow, Ill.....		5.00

# HERDS.

(Owned by Exhibitors.)

Herd young cattle, to consist of one bull and four females, under two years old, by same bull, Cosgrove Live Stock Co., LeSueur.....	35.00
Get of one sire, four females, under four years old, Cosgrove Live Stock Co., LeSueur.....	25.00

# Specials.

Offered by the American Hereford Cattle Breeders' Association.

For best Hereford herd of one bull and four females under two years old, Cosgrove Live Stock Co, LeSueur..	30.00	20.00
For best four Herefords under two years, the get of one bull, bred and owned by exhibitor, Cosgrove Live Stock Co., LeSueur.....	30.00	
For best four Herefords under two years, the get of one bull, bred and owned by exhibitor, H. J. Fluck, Goodenow, Ill.....		20.00

CONDITIONS.—Animals to be eligible to compete for above prizes must be recorded in the American Hereford Record.

C. R. THOMAS, *Secretary.*

## CLASS 23.—HERD SWEEPSTAKES, BEEF.

Herd to consist of one bull, any age, and four females one year or over.)	
Best herd cattle owned in the state, H. F. Brown, Minneapolis.....	100.00
Best herd cattle owned in the state, Ccsgrove Live Stock Co., LeSueur.....	50.00

## CLASS 24.—POLLED ANGUS, OR ABERDEEN.

No entries.

# HERDS.

(Owned by exhibitor.)

No entries.

# Special.

THE AMERICAN ABERDEEN-ANGUS BREEDER'S ASSOCIATION.

No entries.



## CLASS 25.—GALLOWAY.

1st prem. 2d prem.

Bull, three years or over, Brookside Farm Co., Ft. Wayne, Ind.....	\$20.00	\$15.00
Bull, two years and under three, Brookside Farm Co., Ft. Wayne, Ind.....	15.00	
Bull, one year and under two, Hugh Paul, Dundee.....	15.00	
Bull, one year and under two, Brookside Farm Co., Ft. Wayne, Ind.....		10.00
Bull calf, under one year and over four months, Brookside Farm Co., Ft. Wayne, Ind.....	15.00	
Bull calf, under one year and over four months, Hugh Paul, Dundee.....		10.00
Cow, three years and over, Brookside Farm Co., Ft. Wayne, Ind.....	20.00	
Cow, three years and over, Hugh Paul, Dundee.....		15.00
Heifer, two years and under three, Brookside Farm Co., Ft. Wayne, Ind.....	15.00	
Heifer, two years and under three, Hugh Paul, Dundee.....		10.00
Heifer, one year and under two, Brookside Farm Co., Ft. Wayne, Ind.....	15.00	
Heifer, one year and under two, Hugh Paul, Dundee.....		10.00
Heifer calf, under one year and over four months, Brookside Farm Co., Ft. Wayne, Ind.....	10.00	
Heifer calf, under one year and over four months, Hugh Paul, Dundee.....		5.00

## HERDS.

(Owned by exhibitor.)

Herd, young cattle, to consist of one bull and four females under two years old, by same bull, Brookside Farm Co., Ft. Wayne, Ind.....	35.00
Get of one sire, four females under four years, Hugh Paul, Dundee.....	25.00

## CLASS 26.—DEVON.

Bull, three years or over, E. S. Hoppin, Dexter.....	20.00	
Bull calf, under one year and over four months, E. S. Hoppin, Dexter.....	15.00	
Cow, three years or over, E. S. Hoppin, Dexter, Com.....	20.00	15.00
Heifer, two years and under three, E. S. Hoppin, Dexter.....	15.00	
Heifer, one year and under two, E. S. Hoppin, Dexter.....	15.00	10.00
Heifer calf, under one year and over four months, E. S. Hoppin, Dexter.....	10.00	

## HERDS.

(Owned by exhibitor.)

Herd, young cattle, to consist of one bull and four females, under two years, by same bull, E. S. Hoppin, Dexter....	35.00
Get of one sire, four females under four years, E. S. Hoppin, Dexter.....	25.00

## CLASS 27.—RED POLLED.

Bull, three years or over, J. H. Gilfillan, Maquaketa, Iowa..	20.00	
Bull, two years and under three, J. H. Gilfillan, Maquaketa, Ia.....	15.00	
Bull, one year and under two, J. H. Gilfillan, Maquaketa, Ia.....	15.00	
Bull calf, under one year and over four months, J. H. Gilfillan, Maquaketa, Ia.....	15.00	10.00
Cow, three years or over, J. H. Gilfillan, Maquaketa, Ia.....	20.00	15.00
Heifer, two years and under three, J. H. Gilfillan, Maquaketa, Ia.....	15.00	10.00



	1st prem.	2d prem.
Heifer, one year and under two, J. H. Gilfillan, Maquaketa, Ia.....	\$15.00	\$10.00
Heifer calf, under one and over four months, J. H. Gilfillan, Maquaketa.....	10.00	5.00

## HERDS.

(Owned by exhibitor.)

Herd young cattle, to consist of one bull and four females under two years old, by same bull, J. H. Gilfillan, Maquaketa.....	35.00
Get of one sire, four females under four years old, J. H. Gilfillan.....	25.00

## CLASS 28.—HOLSTEIN.

Bull three years or over, M. E. Moore, Cameron, Mo.....	20.00	
Bull three years or over, E. F. Irwin, Richfield.....		15.00
Bull two years and under three, E. F. Irwin, Richfield....	15.00	
Bull one year and under two, E. F. Irwin, Richfield.....	15.00	
Bull one year and under two, M. E. Moore, Cameron, Mo.		10.00
Bull calf, under one year and over four months, M. E. Moore, Cameron, Mo.....	15.00	
Bull calf, under one year and over four months, E. F. Irwin, Richfield.....		10.00
Cow, three years or over, M. E. Moore, Cameron, Mo....	20.00	
Cow, three years or over, E. F. Irwin, Richfield.....		15.00
Heifer, two years and under three, M. E. Moore, Cameron, Mo.....	15.00	
Heifer, two years and under three, E. F. Irwin, Richfield		10.00
Heifer, one year and under two, E. F. Irwin, Richfield...	15.00	
Heifer, one year and under two, M. E. Moore, Cameron, Mo.....		10.00
Heifer calf, under one year and over four months, M. E. Moore, Cameron.....	10.00	
Heifer calf, under one year and over four months, E. F. Irwin, Richfield.....		5.00

## HERDS.

(Owned by exhibitor.)

Herd young cattle, to consist of one bull and four females under two years old, by same bull, E. F. Irwin, Richfield.....	35.00
Get of one sire, four females under four years, E. F. Irwin.....	25.00

## CLASS 29.—JERSEY.

Bull, three years or over, G. S. Bicknell, Minneapolis.....	20.00	
Bull, three years or over, G. W. Dixon, Aberdeen, S. D...		15.00
Bull, one year and under two, La Veta Jersey Cattle Co., Topeka, Kansas.....	15.00	
Bull, one year and under two, G. S. Bicknell, Minneapolis.		10.00
Bull calf, under one year and over four months, G. S. Bicknell, Minneapolis.....	15.00	
Bull calf, under one year and over four months, La Veta Jersey Cattle Co., Topeka.....		10 00
Cow, three years or over, La Veta Jersey Cattle Co., Topeka, Kansas.....	20.00	

	1st prem.	2d prem.
Cow, three years or over, G. S. Bicknell, Minneapolis.....		\$15.00
Heifer, two years and under three, La Veta Jersey Cattle Co., Topeka.....	\$15.00	
Heifer, two years and under three, G. W. Dixon, Aberdeen, S. D.....		10.00
Heifer, one year and under two, La Veta Jersey Cattle Co., Topeka.....	15.00	
Heifer, one year and under two, G. S. Bicknell, Minneapolis.....		10.00
Heifer calf, under one year and over four months, G. S. Bicknell, Minneapolis.....	10.00	
Heifer calf, under one year and over four months, G. W. Dixon, Aberdeen.....		5.00

## HERDS.

(Owned by exhibitor.)

Herd young cattle, to consist of one bull and four females under two years, by same bull, La Veta Jersey Cattle Co., Topeka.....	35.00
Get of one sire, four females under four years, La Veta Jersey Cattle Co., Topeka.....	25.00

## CLASS 30.—GUERNSEY.

Bull, three years or over, F. C. Pillsbury estate, Minneapolis.....	20.00	
Bull, one year and under two, F. C. Pillsbury estate Minneapolis.....	15.00	10.00
Cow, three years or over, F. C. Pillsbury estate, Minneapolis.....	20.00	15.00
Heifer, one year and under two, F. C. Pillsbury estate, Minneapolis.....	15.00	10.00
Heifer calf, under one year and over four months, F. C. Pillsbury estate, Minneapolis.....	10.00	

## HERDS.

(Owned by exhibitor.)

No entries.

## CLASS 31.—BROWN SWISS AND DUTCH BELT.

Bull, two years and under three, F. A. Squiers, Blue Earth City.....	15.00	10.00
Bull calf, under one year and over four months, F. A. Squiers, Blue Earth City.....	15.00	
Cow, three years or over, F. A. Squiers, Blue Earth, City.....	20.00	15.00
Heifer, two years and under three, F. A. Squiers, Blue Earth City.....	15.00	10.00
Heifer, one year and under two, F. A. Squiers, Blue Earth City.....	15.00	10.00
Heifer calf, under one year and over four months, F. A. Squiers, Blue Earth City.....	10.00	5.0

## HERDS.

(Owned by exhibitors.)

Herd young cattle, to consist of one bull and four females under two years, by same bull, F. A. Squiers, Blue Earth City.....	35.00
Get of one sire, four females, under two years, F. A. Squiers, Blue Earth City.....	25.00

## CLASS 32.—HERD SWEEPSTAKES, MILK BREEDS.

(Herd to consist of one bull, any age, and four females, one year or over.)

	1st Prem.	2d Prem.
Best herd of cattle owned in the state, E. F. Irwin, Richfield .....	\$100.00	
Best herd of cattle owned in the state, G. S. Bicknell, Minneapolis .....		\$50.00
Best herd of cattle owned in the state, F. C. Pillsbury Estate, Minneapolis .....	Third	25.00

## CLASS 33.—FAT STEERS OR HEIFERS.

Fat steer or heifer, two years old, H. J. Fluck, Goodenow, Illinois. ....	15.00
Fat steer or heifer, one year old, H. J. Fluck, Goodenow, Illinois.....	15.00

## HERD.

Herd four or more fat steers or heifers, H. J. Fluck, Goodenow, Illinois.....	50.00
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*Special.*

Cosgrove Live Stock Co., Le Sueur, Minnesota, offer for best herd of fat steers, provided it be won by grade Herefords, one registered Hereford bull calf, and \$25 in gold extra, if the steers winning the premiums are by a bull bought of Cosgrove Live Stock Co.

No entries.

## CLASS 34.—HERD GRAND SWEEPSTAKES, ANY BREED.

(Herd must consist of one bull and four females.)

Young herd (beef breed) under two years old, owned and bred by exhibitor, H. F. Brown, Minneapolis .....	100.00
Young herd (beef breed) under two years old, owned and bred by exhibitor, Cosgrove Live Stock Co., Le Sueur ..	50.00
Young herd (milk breed) under two years old, owned and bred by exhibitor, E. F. Irwin, Richfield .....	100.00
Young herd (milk breed) under two years old, owned and bred by exhibitor, F. C. Pillsbury estate, Minneapolis ..	50.00
Young herd (milk breed) under two years old, owned and bred by exhibitor, La Veta Jersey Cattle Co., Topeka, Kansas .....	Commended.
Get of one bull, four or more, any age or sex (beef breed) owned by exhibitor, Cosgrove Live Stock Co., Le Sueur.	100.00
Get of one bull, four or more, any age or sex, (beef breed), owned by exhibitor, Thos. Clark, Beecher, Ill.....	50.00
Get of one bull, owned by exhibitor, (milk breed), four or more, any age or sex, La Veta Jersey Cattle Co .....	100.00
Get of one bull, owned by exhibitor, (milk breed), four or more, any age or sex, E. F. Irwin, Richfield .....	50.00
Get of one bull, owned by exhibitor, (milk breed), four or more, any age or sex, M. E. Moore, Cameron, Mo .....	Commended.

## CLASS 35.—HERD SWEEPSTAKES, ANY BREED.

(Herd shall consist of one bull and four females, any age.)

*Entrance Fee, 10 per cent. of First Money.*

Herd of cattle, (beef breed), belonging to one individual or firm, any breed, H. F. Brown, Minneapolis .....	First	\$250.00
Herd of Cattle, (beef breed), belonging to one individual or firm, Brookside Farm Co., Fort Wayne, Ind.....	Second	150.00



	1st prem.	2d prem.
Herd of cattle, (beef breed), belonging to one individual or firm, Thos. Clark, Beecher, Ill.....	Third	\$100.00
Herd of cattle, (beef breed), belonging to one individual or firm, G. W. Lyle, Monroe, Ia.....	Fourth	50.00
Herd of cattle, (milk breed), belonging to one individual or firm, La Veta Jersey Cattle Co., Topeka, Kansas.....	First	250.00
Herd of cattle (milk breed), belonging to one individual or firm, M. E. Moore, Cameron, Mo.....	Second	150.00
Herd of cattle (milk breed), belonging to one individual or firm, E. F. Irwin, Richfield.....	Third	100.00
Herd of cattle (milk breed), belonging to one individual or firm, F. C. Pillsbury estate, Minneapolis.....	Fourth	50.00

## CLASS 36.—BEEF BREEDS, BY AGES.

*Entrance Fee, 10 per cent. of First Money.*

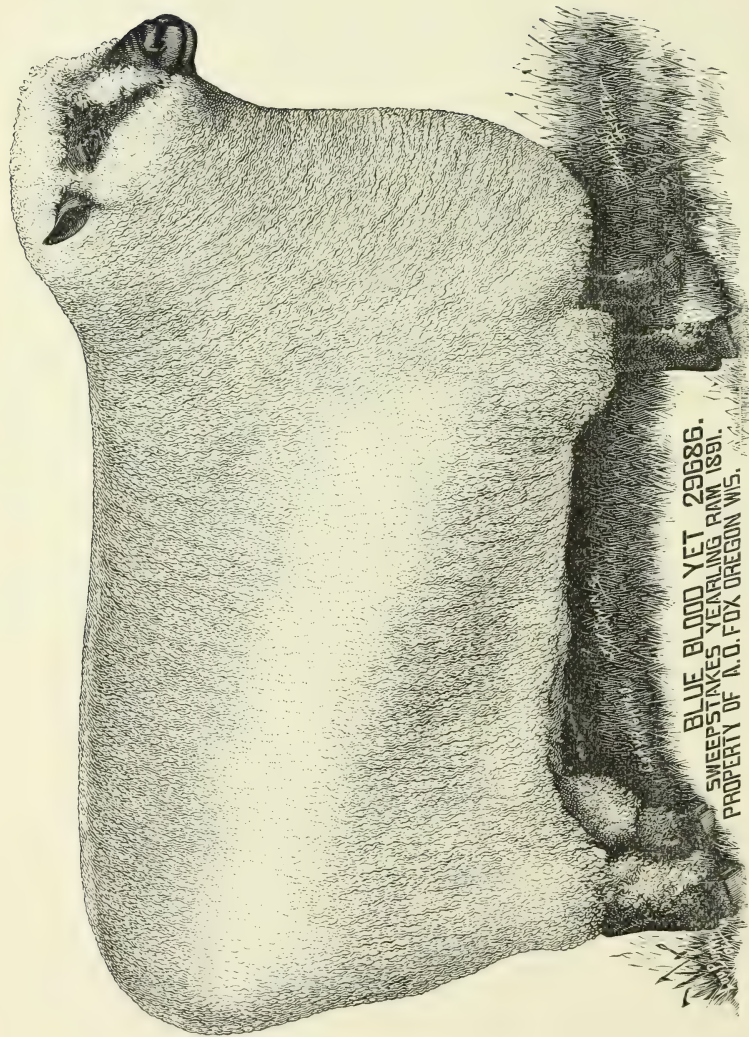
Bull, three years or over, H. F. Brown, Minneapolis.....	\$35.00	
Bull, three years or over, Brookside Farm Co., Ft. Wayne, Ind.....		\$15.00
Bull, two years and under three, Thos. Clark, Buchu, Ill.	35.00	
Bull, two years and under three, Cosgrove Live Stock Co., Le Sueur.....		15.00
Bull, one year and under two, H. F. Brown, Minneapolis.	35.00	
Bull, one year and under two, H. J. Fluck, Goodenow, Ill.		15.00
Bull calf, under one year and over four months, Brookside Farm Co., Ft. Wayne, Ind.....	35.00	
Bull calf, under one year and over four months, Cosgrove Live Stock Co., Le Sueur.....		15.00
Cow, three years or over, H. F. Brown, Minneapolis.....	35.00	
Cow, three years or over, Cosgrove Live Stock Co., LeSueur.		15.00
Heifer, two years and under three, H. F. Brown, Mpls....	35.00	
Heifer, two years and under three, Thos. Clark, Beecher, Ill.....		15.00
Heifer, one year and under two, G. W. Lyle, Monroe, Ia..	35.00	
Heifer, one year and under two, H. F. Brown, Minneapolis.....		15.00
Heifer calf, under one year and over four months, H. F. Brown, Minneapolis.....	35.00	
Heifer calf, under one year and over four months, Thos. Clark, Beecher, Ill.....		15.00

## CLASS 37.—GRAND SWEEPSTAKES.

The following premiums will be given to Shorthorn, Hereford, Aberdeen, Galloway, Polled, Holstein, Jersey, Swiss, Dutch Belt and Guernsey:

Best male of any age, (each breed), Geo. S. Bicknell, Minneapolis.....	Diploma.
Best male of any age, Brookside Stock Farm, Ft. Wayne, Ind.....	Diploma.
Best male of any age, E. F. Irwin, Richfield.....	Diploma.
Best male of any age, Thos. Clark, Beecher, Ill ...	Diploma.
Best male of any age, J. H. Gilfillan, Maquaketa, Ia....	Diploma.
Best male of any age, E. S. Hoppin, Dexter.....	Diploma.
Best male of any age, H. F. Brown, Minneapolis .....	Diploma.
Best male of any age, La Veta Jersey Cattle Co., Topeka, Kansas.....	Diploma.
Best male of any age, F. A. Squires, Blue Earth City...	Diploma.
Best male of any age, Brookside Stock Farm, Ft. Wayne, Ind.....	Diploma.
Best female, of any age, E. F. Irwin, Richfield.....	Diploma.
Best female, of any age, F. C. Pillsbury Estate, Minneapolis.....	Diploma.
Best female, of any age, J. H. Gilfillan, Maquaketa, Ia.	Diploma.





**BLUE BLOOD YET 29686.  
SWEEPSTAKES YEANLING RAM 1891.  
PROPERTY OF A. O. FOX OREGON WIS.**

"BLUE BLOOD YET," 29686, A. S. R. THE SWEEPSTAKES YEANLING SHROPSHIRE RAM OF 1891, WINNER OF FIRST PRIZE AT SHROPSHIRE AND WEST MIDLAND SHOW IN ENGLAND, 1891. ALSO FIRST PRIZE IN HIS CLASS EVERYWHERE EXHIBITED IN AMERICA. ALSO SWEEPSTAKES WINNER OVER ALL DOWN BREEDS AT MINNESOTA AND DAKOTA STATE FAIRS, 1891, AND WINNER OF SILVER MEDAL AT DAKOTA STATE FAIR, SIOUX FALLS, 1891, FOR BEST RAM ANY AGE OR BREED WITH FOUR EWES. SELECTED IN ENGLAND BY A. O. FOX TO STAND AT THE HEAD OF WOODSIDE FLOCK. PROPERTY OF A. O. FOX, OREGON, WIS.



Best female, of any age, E. S. Hoppin, Dexter.....	Diploma.
Best female, of any age, H. F. Brown, Minneapolis....	Diploma.
Best female, of any age, La Veta Jersey Cattle Co., Topeka, Kansas.....	Diploma.
Best female, of any age, T. A. Squires, Blue Earth City.	Diploma.
Best female, of any age, Cosgrove Live Stock Co., Le Sueur.....	Diploma.

## GRADE CATTLE.

(All Breeders of Pure Bred Cattle Barred.)

## CLASS 38.—BEEF BREEDS.

	1st. prem.	2d. prem
Cow, three years or over, J. G. Bass, Hamline.....	\$20.00	
<i>Sweepstakes.</i>		
No Entries.		

## CLASS 39.—DAIRY OR MILK BREEDS.

Cow, three years or over, H. E. Owen, Dexter.....	20.00	
Heifer, two years and under three, E. F. Irwin, Richfield.	15.00	\$10.00
Heifer, one year and under two, E. F. Irwin, Richfield...	10.00	5.00
Heifer calf, under one year and over four months, H. E. Owen, Dexter.....	8.00	
<i>Sweepstakes.</i>		
Best four females, any age owned in state, E. F. Irwin, Richfield.....	35.00	
Total.....		\$4,590.00

## DIVISION C.—SHEEP.

J. H. LETSAN, ALEXANDRIA, SUPERINTENDENT.

Premiums awarded.....\$936.00

THOS. SHAW, } Judges.  
JAMES SCOTT. }

## CLASS 40.—MERINO.

	1st Prem.	2d Prem.
Ram, two years or over, J. H. Pitcher, Eagle, Wis.....	\$12.00	
Ram, two years or over, David Benedict, Woodworth, Wis		7.00
Ram, one year old, J. H. Pitcher, Eagle, Wis.....	12.00	
Ram, one year old, T. N. Porter, Rochester.....		7.00
Ram lamb, J. H. Pitcher, Eagle, Wis.....	10.00	5.00
Ewe, two years or over, T. N. Porter, Rochester.....	10.00	5.00
Ewe, one year old, J. H. Pitcher, Eagle, Wis.....	10.00	
Ewe, one year old, T. N. Porter, Rochester.....		5.00
Ewe lamb, J. H. Pitcher, Eagle, Wis.....	8.00	
Ewe lamb, T. N. Porter, Rochester.....		4.00

*Sweepstakes.*

Ram, any age, J. H. Pitcher, Eagle, Wis.....	10.00
Ewe, any age, J. H. Pitcher, Eagle, Wis.....	10.00

## CLASS 41.—COTSWOLD.

	1st prem.	2d prem.
Ram, two years or over, Geo. Harding & Sons, Waukesha, Wis. ....	\$12.00	\$7.00
Ram, one year old, Geo. Harding & Sons, Waukesha, Wis. ....	12.00	7.00
Ram lamb, Geo. Harding & Sons, Waukesha, Wis. ....	10.00	5.00
Ewe, two years or over, Geo. Harding & Sons, Waukesha, Wis. ....	10.00	5.00
Ewe one year old, Geo. Harding & Sons, Waukesha, Wis. ....	10.00	5.00
Ewe lamb, Geo. Harding & Sons, Waukesha, Wis. ....	8.00	4.00

*Sweepstakes.*

Ram, any age, Geo. Harding & Sons, Waukesha, Wis. ....	10.00
Ewe, any age, Geo. Harding & Sons, Waukesha, Wis. ....	10.00

## CLASS 42.—OXFORD DOWN.

Ram, two years or over, Geo. McKerrow, Sussex, Wis. ....	12.00	7.00
Ram, one year old, Geo. McKerrow, Sussex, Wis. ....	12.00	7.00
Ram lamb, Geo. McKerrow, Sussex, Wis. ....	10.00	5.00
Ewe, two years or over, Geo. McKerrow, Sussex, Wis. ....	10.00	5.00
Ewe, one year old, Geo. McKerrow, Sussex, Wis. ....	10.00	5.00
Ewe lamb, Geo. McKerrow, Sussex, Wis. ....	8.00	4.00

*Sweepstakes.*

Ram, any age, Geo. McKerrow, Sussex, Wis. ....	10.00
Ewe, any age, Geo. McKerrow, Sussex, Wis. ....	10.00

## CLASS 43.—LEICESTER AND LINCOLN.

Ram, two years or over, Geo. Harding & Sons, Waukesha, Wis. ....	12.00	
Ram, two years or over, D. C. Graham, Cameron, Ill. ....		7.00
Ram, one year old, Geo. Harding & Sons, Waukesha, Wis. ....	12.00	7.00
Ram lamb, Geo. Harding & Sons, Waukesha, Wis. ....	10.00	5.00
Ewe, two years or over, Geo. Harding & Sons, Waukesha, Wis. ....	10.00	5.00
Ewe, one year old, Geo. Harding & Sons, Waukesha, Wis. ....	10.00	5.00
Ewe, lamb, Geo. Harding & Sons, Waukesha, Wis. ....	8.00	4.00

*Sweepstakes.*

Ram, any age, Geo. Harding & Sons, Waukesha, Wis. ....	10.00
Ewe, any age, Geo. H. Harding & Sons, Waukesha, Wis. ....	10.00

## CLASS 44.—SHROPSHIRE DOWN.

Ram, two years or over, A. O. Fox, Oregon, Wis. ....	12.00	
Ram, two years or over, Geo. Allen & Son, Allerton, Ill. ....		7.00
Ram, one year old, Geo. Allen & Son, Allerton, Ill. ....	12.00	7.00
Ram lamb, Geo. Allen & Son, Allerton, Ill. ....	10.00	
Ram lamb, A. O. Fox, Oregon, Wisconsin ....		5.00
Ewe, two years or over, Geo. Allen & Son, Allerton, Ill. ....	10.00	5.00
Ewe, one year old, Geo. Allen & Son, Allerton, Illinois. ....	10.00	
Ewe, one year old, A. O. Fox, Oregon, Wisconsin. ....		5.00
Ewe lamb, Geo. Allen & Son, Allerton, Illinois. ....	8.00	4.00

*Sweepstakes.*

Ram, any age, Geo. Allen & Son, Allerton, Illinois. ....	10.00
Ewe, any age, A. O. Fox, Oregon, Wisconsin. ....	10.00

## CLASS 45.—SOUTHDOWN.

	1st prem.	2d prem.
Ram, two years or over, Geo. McKerrow, Sussex, Wis. ....	\$12.00	\$7.00
Ram, one year old, Geo. McKerrow, Sussex, Wis. ....	12.00	7.00
Ram lamb, Geo. McKerrow, Sussex, Wis. ....	10.00	5.00
Ewe, two years or over, Geo. McKerrow, Sussex, Wis. ....	10.00	5.00
Ewe, one year old, Geo. McKerrow, Sussex, Wis. ....	10.00	5.00
Ewe lamb, Geo. McKerrow, Sussex, Wis. ....	8.00	4.00

*Sweepstakes.*

Ram, any age, Geo. McKerrow, Sussex, Wis. ....	10.00
Ewe, any age, Geo. McKerrow, Sussex, Wis. ....	10.00

## CLASS 46.—DORSET. (HORNED.)

Ram, two years or over, Fletcher Bros., Minneapolis. ....	12.00	
Ram, one year old, Fletcher Bros., Minneapolis. ....	12.00	
Ram lamb, Fletcher Bros., Minneapolis. ....	10.00	5.00
Ewe, two years or over, Fletcher Bros., Minneapolis. ....	10.00	5.00
Ewe, one year old, Fletcher Bros., Minneapolis. ....	10.00	
Ewe lamb, Fletcher Bros., Minneapolis. ....	8.00	4.00

*Sweepstakes.*

Ram, any age, Fletcher Bros., Minneapolis. ....	10.00
Ewe, any age, Fletcher Bros., Minneapolis. ....	10.00

## CLASS 47.—SWEEPSTAKES.

(For Merino, Longwool and Medium, [each breed.] )

Ram and five ewes, any age, Merino, owned and bred by exhibitor, J. H. Pitcher, Eagle, Wisconsin. ....	15.00	
Ram and five ewes, any age, Merino, owned and bred by exhibitor, T. N. Porter, Rochester. ....		10.00
Ram, five ewes, any age, longwool, owned and bred by exhibitor, G. Harding & Sons, Waukesha. ....	15.00	10.00
Ram, five ewes, any age, medium, owned and bred by exhibitor, A. O. Fox, Oregon, Wisconsin. ....	15.00	
Ram, five ewes, any age, medium, owned and bred by exhibitor, G. Allen & Son, Allerton, Illinois. ....		10.00
Ram and four of his get, one year old or under, Merino, bred and owned by exhibitor, J. H. Pitcher, Eagle, Wis. ....	15.00	
Ram and four of his get, one year old or under, Merino, bred and owned by exhibitor, T. N. Porter, Rochester. .		10.00
Ram and four of his get, one year old or under, longwool, bred and owned by exhibitor, George Harding & Sons, Waukesha, Wisconsin. ....	15.00	10.00
Ram and four of his get, one year old or under, medium, bred and owned by exhibitor, A. O. Fox, Oregon, Wis. .	15.00	
Ram and four of his get, one year old or under, medium, bred and owned by exhibitor, George Allen & Son, Allerton, Illinois. ....		10.00

## CLASS 48.—CROSSES, (GRADES EXCLUDED).

No entries.

Total .....

\$936.00



## DIVISION D.—SWINE.

Premiums awarded..... \$845.00

J. H. LETSON, Alexandria, Superintendent.

P. D. BROOKWAY, Judge.

## CLASS 49.—BERKSHIRE.

	1st Prem.	2d Prem.
Boar, two years or over, T. N. Porter, Rochester.....	\$15.00	
Boar, one year and under two, A. J. Lovejoy & Son, Roscoe, Ill.....	15.00	
Boar, six months and under one year, A. J. Lovejoy & Son, Roscoe, Ill.....	10.00	
Boar, six months and under one year, T. N. Porter, Rochester.....		\$5.00
Breeding sow, two years or over, A. J. Lovejoy & Son, Roscoe, Ill.....	15.00	
Breeding sow, two years or over, T. N. Porter, Rochester.		10.00
Breeding sow, one year and under two, A. J. Lovejoy & Son, Roscoe, Ill.....	15.00	10.00
Sow pig, six months and under one year, T. N. Porter, Rochester.....	10.00	5.00
Herd to consist of one boar and four sows one year or over, A. J. Lovejoy & Son, Roscoe, Ill.....	25.00	
Herd to consist of one boar and four sows under one year, T. N. Porter, Rochester.....	20.00	
Herd to consist of one boar and four sows under one year, A. J. Lovejoy & Son, Roscoe, Ill.....		10.00

*Special.*

The American Berkshire Association offer the first ten volumes of the "American Berkshire Record" for the best recorded sow and litter of not less than five recorded pigs under six months old, owned and exhibited by a resident of Minnesota valued at \$50.00.

CONDITIONS. 1. That there shall be not less than three competitors.

2. That the competing animals be recorded in the "American Berkshire Record" prior to date of entry, with the secretary of Minnesota State Fair, and that list of such entries be furnished the secretary of this Association at the close of the Fair.

3. That a copy of these resolutions be printed in the Premium List of the Fair in connection with the classification of swine.

JNO. G. SPRINGER, Secy.

No entries.

## CLASS 50.—SUFFOLK.

No entries.

## CLASS 51.—POLAND CHINA.

	1st Prem.	2d Prem.
Boar, two years or over, C. E. Hancock, Chatfield.....	\$15.00	\$10.00
Boar, one year and under two, C. H. Murphy, Caledonia .	15.00	
Boar, one year and under two, C. E. Hancock, Chatfield..		10.00
Boar, six months and under one year, C. E. Hancock, Chatfield.....	10.00	
Boar, six months and under one year, C. H. Murphy, Caledonia. ....		5.00
Breeding sow, two years or over, C. E. Hancock, Chatfield	15.00	10.00
Breeding sow, one year and under two, C. E. Hancock, Chatfield.....	15.00	
Sow pig, six months and under one year, C. E. Hancock, Chatfield.....	10.00	5.00

1st Prem. 2d Prem.

Herd, to consist of one boar and four sows, one year old or over, C. E. Hancock, Chatfield.....	\$25.00	
Herd, to consist of one boar and four sows, under one year old, C. E. Hancock, Chatfield.....	20.00	
Herd, to consist of one boar and four sows, under one year, C. H. Murphy, Caledonia.....		\$10.00

## CLASS 52.—CHESTER WHITE.

Boar, two years or over, Fred Luchsinger, Woodbury....	15.00	
Boar, one year and under two, Fred Luchsinger, Woodbury	15.00	10.00
Breeding sow, two years or over, Fred Luchsinger, Woodbury.....	15.00	10.00
Breeding sow, one year and under two, Fred Luchsinger, Woodbury.....	15.00	10.00
Sow pig, six months and under one year, Fred Luchsinger, Woodbury.....	10.00	
Herd to consist of one boar and four sows, one year old or over, Fred Luchsinger, Woodbury.....	25.00	
Herd to consist of one boar and four sows, under one year old, Fred Luchsinger, Woodbury.....	20.00	

## CLASS 53.—JERSEY RED.

Boar, two years or over, C. A. Thomas, Monticello, Iowa..	15.00	
Boar, one year and under two, C. A. Thomas, Monticello, Iowa.....	15.00	10.00
Boar, six months old and under one year, C. A. Thomas, Monticello, Iowa.....	10.00	
Breeding sow, two years or over, C. A. Thomas, Monticello, Iowa.....	15.00	10.00
Breeding sow, one year and under two, C. A. Thomas, Monticello, Iowa.....	15.00	
Sow pig, six months and under one year, C. A. Thomas, Monticello, Iowa.....	10.00	
Herd to consist of one boar and four sows, one year or over, C. A. Thomas, Monticello, Iowa.....	25.00	
Herd to consist of one boar and four sows, under one year old, C. A. Thomas, Monticello, Iowa.....	20.00	

## CLASS 54.—ESSEX.

Boar, one year and under two, C. H. Murphy, Caledonia..	15.00	
Boar, six months and under 1 yr., C. H. Murphy, Caledonia	10.00	
Breeding sow, one year and under two, C. H. Murphy, Caledonia.....	15.00	
Sow pig, six months and under one year, C. H. Murphy, Caledonia.....	10.00	

## CLASS 55.—VICTORIA.

Boar, two years or over, Davis & Benedict, Woodworth, Wis.....	15.00	
Boar, one year and under two, Davis & Benedict, Woodworth, Wis.....	15.00	10.00
Boar, six months and under one year, Davis & Benedict, Woodworth, Wis.....	10.00	5.00
Breeding sow, two years or over, Davis & Benedict, Woodworth, Wis.....	15.00	10.00
Breeding sow, one year and under two, Davis & Benedict, Woodworth, Wis.....	15.00	10.00
Sow pig, six months and under one year, Davis & Benedict, Woodworth, Wis.....	10.00	5.00

	1st prem.	2d prem.
Herd to consist of one boar and four sows, one year or over, Davis & Benedict, Woodworth, Wis. ....	\$25.00	
Herd to consist of one boar and four sows, under one year, Davis & Benedict, Woodworth, Wis. ....	20.00	\$10.00

## CLASS 56.—SMALL YORKSHIRE.

No awards.

Total .....	\$845.00
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## DIVISION E.—POULTRY.

Premiums awarded .....	\$396.00
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(Under the auspices of the State Poultry Association.)

J. J. FURLONG, Austin, Superintendent.

LESLIE PARLIN, St. Paul, Manager.

G. D. HOLDEN, Judge.

## CLASS 57.—DOMESTIC FOWLS.

*Asiatic.*

Brahmas, light, Franklin Benner, Minneapolis.....	\$4.00	
Brahmas, light, J. R. Brabazon, Delavin, Wis.....		\$2.00
Brahmas, dark, J. R. Brabazon, Delavin, Wis.....	2.00	
Brahmas, dark, chicks, J. R. Brabazon, Delavin, Wis.....	2.00	
Cochins, buff, Leslie Parlin, St. Paul.....	4.00	
Cochins, buff, J. R. Brabazon, Delavin, Wis.....		2.00
Cochins, buff, chicks, Leslie Parlin, St. Paul.....	4.00	2.00
Cochins, partridge, Joseph H. Prior, Minneapolis.....	4 00	
Cochins, partridge, J. R. Brabazon, Delavin, Wis.....		2.00
Cochins, partridge, chicks, J. R. Brabazon, Delavin, Wis.....		2.00
Cochins, white, J. R. Brabazon, Delavin, Wis.....	2.00	
Cochins, white, chicks, J. R. Brabazon, Delavin, Wis.....	2.00	
Cochins, black, J. R. Brabazon, Delavin, Wis.....	2.00	
Cochins, black, chicks, J. R. Brabazon, Delavin, Wis....	2.00	
Langshaus, Bott & Shiffman, St. Paul.....	3.00	
Langshaus, J. R. Brabazon, Delavin, Wis.....		1.50
Langshaus, chicks, J. R. Brabazon, Delavin, Wis.....	3.00	
Langshaus, chicks, Bott & Shiffman, St. Paul.....		1.50

*American.*

Plymouth Rocks, barred, F. W. Smith, Minneapolis.....	4.00	
Plymouth Rocks, barred, J. R. Brabazon, Delavin, Wis...		2.00
Plymouth Rocks, barred, chicks, N. S. Beardsley, St. Paul	4.00	2.00
Plymouth Rocks, white, chicks, J. R. Brabazon, Delavin, Wis.....	3.00	
Wyandottes, silver gates poultry yards, St. Paul.....	4.00	
Wyandottes, silver, J. R. Brabazon, Delavin, Wis.....		2.00
Wyandottes, silver, chicks, Joseph Hall, Red Wing.....	4.00	2.00
Wyandottes, golden, Theo. L. Morgan, St. Paul.....	4.00	
Wyandottes, golden, J. R. Brabazon, Delavin, Wis.....		2.00
Wyandottes, golden, chicks, Theo. L. Morgan, St. Paul...	4.00	2.00
Wyandottes, white, J. R. Brabazon, Delavin, Wis.....	3.00	
Wyandottes, white, Gates' Poultry Yards, St. Paul.....		1.50



	1st Prem.	2d Prem.
Wyandottes, white, chicks, C. E. Hancock, Chatfield...	\$3.00	
Javas, black, J. R. Brabazon, Delevan, Wis.....	3.00	
Dominiques, American, J. R. Brabazon, Delevan, Wis. . .	2.00	
Dominiques, American, C. E. Hancock, Chatfield .....		\$1.00
Dominiques, American, chicks, C. E. Hancock, Chatfield.	2.00	
Dominiques, American, chicks, J. R. Brabazon, Delevan, Wisconsin.....		1.00

*Spanish.*

Leghorns, black, chicks, J. R. Brabazon, Delevan, Wis. . .	3.00	
Leghorns, R. C. white, J. R. Brabazon, Delevan, Wis.....	3.00	
Leghorns, R. C. white, J. F. Hulster, St. Paul.....		1.50
Leghorns, R. C. white, chicks, J. R. Brabazon, Delevan, Wisconsin .....	3.00	
Leghorns, brown, chicks, J. R. Brabazon, Delevan, Wis. .	4.00	
Leghorns, R. C. brown, B. S. Griffin, St. Paul.....		1.00
Leghorns, R. C. brown, chicks, B. S. Griffin, St. Paul.....	2.00	1.00
Andalusians, chicks, F. W. Judson, Farmington.. . . .	2.00	
Minorcas, black, J. R. Brabazon, Delevan, Wis.....	2.00	
Minorcas, black, chicks, J. R. Brabazon, Delevan, Wis....	2.00	
Red Caps, J. R. Brabazon, Delevan, Wis.....	2.00	
Red Caps, chicks, J. R. Brabazon, Delevan, Wis.....	2.00	
Red Caps, chicks, Bott & Schiffman, St. Paul.....		1.00

*Hamburg.*

Spangled, silver, J. R. Brabazon, Delevan, Wis.....	3.00	
Spangled, silver, chicks, J. R. Brabazon, Delevan, Wis...	3.00	
Penciled, silver, J. R. Brabazon, Delevan, Wis.....	2.00	
Black, chicks, J. R. Brabazon, Delevan, Wis....	2.00	

*Polish.*

Black, white crested, J. R. Brabazon, Delevan, Wis.....	3.00	
Black, white crested, chicks, J. R. Brabazon, Delevan, Wis.....	3.00	1.50
Silver, J. R. Brabazon, Delevan, Wis.....	2.00	
Silver bearded, J. R. Brabazon, Delevan, Wis.....	2.00	
Silver bearded, chicks, J. R. Brabazon, Delevan, Wis....	2.00	

*Dorking.*

Silver gray, J. R. Brabazon, Delevan, Wis.....	2.00	
Silver gray, chicks, J. R. Brabazon, Delevan, Wis.....	2.00	

*French.*

Houdans, J. R. Brabazon, Delevan, Wis.....	3.00	
Houdans, chicks, J. R. Brabazon, Delevan, Wis.....	3.00	
Best breeding pen, No. 1 (for fowls only), one male and four females, Franklin Benner, Minneapolis.....	5.00	
Best breeding pen, No. 1, (for fowls only), one male and four females, T. L. Morgan, St. Paul .....		3.00
Best breeding pen, No. 3, (for fowls only), one male and four females, Henry Perkins, St. Paul.....	5.00	3.00
Best breeding pens, No. 8, (for fowls only), one male and four females, N. S. Beardsley, St. Paul.....	5.00	
Best breeding pens, No. 11, (for fowls only), one male and four females, T. L. Morgan, St. Paul .....	5.00	
Best breeding pens, No. 17, (for fowls only), one male and four females, Franklin Benner, Minneapolis.....	5.00	3.00
Best breeding pens, No. 20, (for fowls only), one male and four females, Franklin Benner, Minneapolis.....	5.00	

## CLASS 58.—GAME FOWLS.

*Game.*

	1st prem.	2d prem.
Indian, A. A. Fields, Cedar Falls, Iowa .....	\$3.00	
Indian, James H. Pryor, Minneapolis.....		\$1.50
Indian, chicks, A. A. Fields, Cedar Falls, Iowa .....	3.00	1.50
Red, black breasted, H. H. Koner, Owatonna.....	3.00	□
Red, black breasted, J. R. Brabazon, Delevan, Wisconsin.		1.50
Red, black breasted, chicks, H. H. Koner, Owatonna.....	3.00	1.50
Duckwing, yellow, J. R. Brabazon, Delevan, Wis.....		1.00
Duckwing, yellow, chicks, J. R. Brabazon, Delevan, Wis.		1.00
Pit, chicks, J. R. Brabazon, Delevan, Wisconsin.....		1.00

*Game Bantams.*

Duckwing, H. H. Koner, Owatonna.....	2.00	1.00
Duckwing, chicks, J. R. Brabazon, Delevan, Wis.....	2.00	
Red, black breasted, H. H. Koner, Owatonna .....	2.00	
Red, black breasted, J. R. Brabazon, Delevan, Wis.....		1.00
Red, black breasted, chicks, A. A. Fields, Cedar Falls, Ia.	2.00	
Red, black breasted, chicks, J. R. Brabazon, Delevan, Wis		1.00

## BANTAMS, OTHER THAN GAME.

Seabright, golden, J. R. Brabazon, Delevan, Wis.....	2.00	
Seabright, golden, chicks, J. R. Brabazon, Delevan, Wis...	2.00	
Pekin, Leslie Parlin, St. Paul .....	2.00	
Pekin, Franklin Benner, Minneapolis.....		1.00
Pekin, chicks, Leslie Parlin St. Paul.....	2.00	1.00
Black, rose combed, J. R. Brabazon, Delevan, Wis.....	2.00	
Black, rose combed, H. F. Hulster, St. Paul .....		1.00
Black, rose combed, chicks, J. R. Brabazon, Delevan, Wis.	2.00	
Black, rose combed, chicks, A. A. Fields, Cedar Falls, Iowa.		1.00

## CLASS 59.—TURKEYS, DUCKS AND GEESE.

*Turkeys.*

Bronze, Gates poultry yards, St. Paul.....	4.00	
Bronze, J. R. Brabazon, Delevan, Wis.....		2.00
Bronze, Chicks, J. R. Brabazon, Delevan, Wis.....	4.00	
Bronze, chicks, Gates poultry yards, St. Paul.....		2.00
Holland, white, J. R. Brabazon, Delevan, Wis.....	3.00	
Holland, white, chicks, J. R. Brabazon, Delevan, Wis...	3.00	
Wild, J. R. Brabazon, Delevan, Wis .....	2.00	
Wild, Thos. L. Morgan, St. Paul.....		1.00

*Ducks.*

Aylesbury, J. R. Brabazon, Delevan, Wis.....	2.00	
Aylesbury, chicks, J. R. Brabazon, Delevan, Wis.....	2.00	
Pekin, J. R. Brabazon, Delevan, Wis .....	3.00	
Pekin, B. S. Griffin, St. Paul.....		1.50
Pekin, chicks, B. S. Griffin, St. Paul.....	3.00	
Pekin, chicks, J. R. Brabazon, Delevan, Wis.....		1.50
Rouen, C. A. Fields, Cedar Falls, Iowa.....	2.00	
Rouen, J. R. Brabazon, Delevan, Wis.....		1.00
Rouen, chicks, J. R. Brabazon, Delevan, Wis.....	2.00	
Muscovy, white, J. R. Brabazon, Delevan, Wis .....	2.00	
Muscovy, colored, J. R. Brabazon, Delevan, Wis.....	2.00	
Muscovy, colored, chicks, J. R. Brabazon, Delevan, Wis..	2.00	

*Geese.*

Embsden, J. R. Brabazon, Delevan, Wis.....	3.00	
Embsden, chicks, J. R. Brabazon, Delevan, Wis.....	3.00	
Toulouse, J. R. Brabazon, Delevan, Wis.....	3.00	
Toulouse, Thos. L. Morgan, St. Paul.....		1.50

	1st prem.	2d prem.
Toulouse, chicks, J. R. Brabazon, Delevan, Wis.....	\$3.00	
Toulouse, chicks, Thos. L. Morgan, St. Paul.....		\$1.50
China, White, J. R. Brabazon, Delevan, Wis.....	3.00	
China, white, Thos L. Morgan, St. Paul.....		1.50
China, white, chicks, J. R. Brabazon, Delevan, Wis.....	3.00	
China, brown, Thos. L. Morgan, St. Paul.....	3.00	1.50
China, brown, chicks, J. R. Brabazon, Delevan, Wis.....	3.00	
Wild, Thos. L. Morgan, St. Paul.....	3.00	1.50
Wild, chicks, Thos. L. Morgan, St. Paul.....	3.00	

## CLASS 60.—ORNAMENTAL AND PET STOCK.

Pearl Guineas, J. R. Brabazon; Delavan, Wis.....	2.00	1.00
Pea Fowls, J. R. Brabazon, Delevan, Wis.....	2.00	

## CLASS 61.—SWEEPSTAKES.

## Special County Exhibit.

NOTE.—Birds entered in this class cannot compete as single birds and birds entered singly cannot compete in county exhibit.

Best county (outside Hennepin and Ramsey) exhibit of poultry, Washington Co. exhibit, St. Paul.....	50.00
Best brooder in operation, Leslie Parlin, St. Paul.....	5.00

*Special Premiums.*

Pratt Food Company, 130 Walnut street, Philadelphia, awarded the following special premiums to the best pairs on exhibition and owned in the State of Minnesota:

F. W. Smith, Minneapolis, best pair Barred Plymouth Rocks.....	
Franklin Benner, Minneapolis, best pair Light Brahmas	
Leslie Parlin, St. Paul, best pair Buff Cochins.....	
H. H. Krier, Owatonna, best pair Duckwing Game.....	
Gates Poultry Yards, St. Paul, best pair Bronze Turkeys.	
Total.....	\$391.00

## DIVISION F.

Premiums awarded.....	\$436.20
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To aid committee in determining the real as well as the relative merits of samples, the following scale of points will be observed:

## BUTTER.

Flavor.....	50
Grain.....	25
Color.....	15
Salting.....	10
Total.....	100

## CHEESE.

Flavor.....	40
Texture.....	25
Style.....	10
Color.....	15
Salting.....	10
Total.....	100



SCORE TABLE NO. 1.—BUTTER.

Exhibitor.	Residence.	Maker of product	Entry No.	Class.	Lot.	Flavor.	Grain.	Color.	Total pts.	Cream'y or d'ry	Amt. of prem'um.	Premium.	Remarks.
B. F. Woodman .....	Northfield...	U. T. Patton.....	97	62	150	25	15	10	100	Cr'm'y	\$8.35	..	
Madelia Butter Co.....	Madelia.....	E. J. Sanderson....	22	62	150	25	14	9	98	"	8.15	..	
D. M. Richards.....	Glenville.....	D. M. Richards....	55	62	148	25	14	9	95	"	7.90	..	
D. A. Palmer.....	Zumbrota....	D. A. Palmer.....	59	62	148	23	15	8	94	"	7.85	..	
Danielson Creamery Co	Grove City....	C. H. Schack.....	7	62	147	23	14	9	93	"	7.75	..	
Clarks Grove Cream'y Co	Clark's Grove	L. P. Larson.....	8	62	143	24	15	10	92	"	7.65	..	
Golden Rule Cream'y Co	Owatonna....	Willis L. Noyes....	23	62	148	23	12	9	92	"	7.65	..	
Clinton Falls Cream'y Co	Clinton Falls	Frank Mandell....	40	62	145	23	14	10	91	"	7.60	..	
Walcott Creamery Co....	Walcott.....	G. F. Ustis.....	38	62	147	22	14	8	91	"	7.60	..	
W. Twentyman.....	Rochester....	W. Twentyman....	61	62	148	22	14	7	91	"	7.40	..	
Guernsey Creamery Co.	Wells.....	G. Iverson.....	1	62	143	23	14	9	89	"	7.40	..	
J. A. Sinclair Cream'y Co	Fremont.....	A. W. Glass.....	75	62	181	22	13	8	88	"	7.35	..	
J. Farrell.....	St. Paul.....	J. Farrell.....	63	62	143	22	13	8	86	"	7.15	..	
D. D. Danielson.....	Dundas.....	D. D. Danielson....	19	62	142	20	14	9	85	"	..	..	
Simon Brown.....	Wabashaw....	Simon Brown.....	36	62	143	20	14	8	85	"	..	..	
Zumbro Creamery Co....	Rock Dell....	P. H. Keiffer.....	45	62	142	18	13	10	83	"	..	..	
Chas. F. Meyer.....	Manchester...	Chas. F. Meyer....	43	62	142	15	14	8	79	"	..	..	
A. E. Comstock.....	Alma City....	A. E. Comstock....	32	62	130	18	10	8	66	"	..	..	
B. F. Woodman.....	Northfield...	U. T. Patton.....	62	150	25	15	10	100	"	"	10.00	..	
S. Leslie.....	Waseca.....	S. Leslie.....	62	44	29	15	9	95	D 40lbs	"	10.00	..	
S. Leslie.....	Waseca.....	S. Leslie.....	62	74	22	15	9	90	D prnt	"	10.00	..	
Crescent City Cream'y Co	St Paul.....	Best display]	62	8	..	..	..	..	..	"	..	..	
*B. F. Woodman.....	Northfield...	U. T. Patton.....	62	1	..	..	..	..	..	"	..	..	
+Potter Lucas.....	Minneapolis..	Mrs. M. Holmes..	62	1	..	..	..	..	..	"	..	..	

\*To the maker of 1st premium butter. Class 62, Lot 1, gold medal.

+To the maker of the best fancy shapes in butter, silver medal.

J. H. HULSIEK,  
R. D. ARUNDELL, } Judges.  
H. A. HOLMES, Referee Judge.

Society Special Sweepstakes \$40, to be divided  
equally to entries scoring the highest in its class.  
Lots 1, 4, 7, 9.

\*Gold medal } Given by Society.  
+Silver medal }

Butter exhibited, Class 62, Lot 1, 60 lb. tub creamery  
butter, \$100; divided pro rata among entries scor-  
ing above \$5 points.

SCORE TABLE NO. 2.—BUTTER.

Exhibitor.	Residence.	Maker of product	Entry No	Class.	Lot.	Flavor.	Grain.	Color.	Salting.	Total pts.	Crem'y or d'ry.	Amt. of premi- um.	Prem- ium.	Remarks.
Biscay Creamery Co....	Biscay.....	Charles Ray.....	17	62	2	46	22	14	9	91	Cr'm'y	.....	1	If salted with Genessee salt, 224 pounds—value \$25.00.
Clinton Falls Creamery Co....	Clinton Falls .....	Frank Mandell....	42	62	9	49	23	15	9	96	"	\$35.00	1	If salted with Ashton's salt, Ashton Salt Co.
Walcott Creamery Co....	Walcott.....	G. F. Eustis.....	39	62	9	48	23	15	8	94	"	.....	1	If salted with Ashton's salt, Ashton Salt Co.
D. D. Donaldson.....	Dundas.....	D. D. Donaldson....	20	62	9	45	22	12	9	88	"	.....	1	If salted with Ashton's salt, Ashton Salt Co.
D. A. Palmer.....	Zumbrota.....	D. A. Palmer.....	59	62	9	43	22	12	8	85	"	.....	1	If salted with Ashton's salt, Ashton Salt Co.
D. A. Palmer.....	Zumbrota.....	D. A. Palmer.....	60	62	9	40	22	13	7	82	"	.....	1	If salted with Ashton's salt, Ashton Salt Co.
Charles Meyer.....	Manchester.....	Charles Meyer.....	44	62	9	42	18	14	8	82	"	.....	1	If salted with Ashton's salt, Ashton Salt Co.
J. Farrell.....	St. Paul.....	J. Farrell.....	64	62	9	42	18	14	6	80	"	.....	1	If salted with Ashton's salt, Ashton Salt Co.
S. Leslie.....	Waseca.....	S. Leslie.....	49	62	4	49	22	15	9	95	Dairy	40.05	1	Pro rata premium, \$75.00; minimum points, 80.
Rhys J. Evans.....	Muskoda.....	Mrs. R. J. Evans....	9	62	4	48	22	14	9	83	D-pr't.	34.97	2	Pro rata premium, \$75.00; minimum points, 80.
S. Leslie.....	Waseca.....	S. Leslie.....	52	62	7	45	22	14	9	90	"	18.25	1	Roll print, dairy, pro rata, \$50.00.
J. G. Bass.....	Hamlin.....	J. G. Bass.....	48	62	7	44	22	12	9	87	"	17.60	2	Roll print, dairy, pro rata, \$50.00.
Black House Dairy Farm	Detroit.....	Bessie L. Billings..	5	62	7	40	15	10	5	70	Dairy	14.75	3	Roll print, dairy, pro rata, \$50.00.
S. Leslie.....	Waseca.....	S. Leslie.....	50	62	5	45	20	15	10	90	"	7.50	1	Special premium, 10 56-lb. sacks Genessee salt, value \$7.50.
R. J. Evans.....	Muskoda.....	Mrs. R. J. Evans....	10	62	5	40	18	12	8	78	"	.....	1	Special premium, Cornish and Green, all dairy butter
R. J. Evans.....	Muskoda.....	Mrs. R. J. Evans....	14	62	12	40	25	14	9	88	"	Val.	1	Scoring 85 print, each sack dairy salt.
Zumbro Creamery.....	Rock Dell....	P. H. Kiefer.....	46	62	10	48	20	15	10	93	Cr'm'y	20.00	1	Spec. given by Cornish, Curtis & Green, best tub but'r
Crescent Creamery Co....	St. Paul.....	Crescent City.....	65	62	8	.....	.....	.....	.....	.....	"	5.00	1	\$500 in gold to make if butter is colored with Thatch- ers orange color and s'l't'd with Warsaw high grade s'l't
A. E. Comstock.....	Alma City.....	A. E. Comstock.....	30	62	8	.....	.....	.....	.....	.....	"	3.00	2	Granulated butter, display in glass.
S. Leslie.....	Waseca.....	S. Leslie.....	49	62	6	49	22	15	9	95	Dairy	.....	1	C. N. Somdysyn, agent for Washington Butter Color, special premiums.
S. Leslie.....	Waseca.....	S. Leslie.....	52	62	7	45	22	14	9	90	"	.....	1	1 dozen 50-cent bottles color.
J. G. Bass.....	Hamlin.....	J. G. Bass.....	48	62	7	44	22	12	9	87	"	.....	29	B 50-cent bottles color
R. J. Evans.....	Muskoda.....	Mrs. R. J. Evans....	9	62	4	38	23	14	9	83	"	.....	3	12 25-cent bottles color.
Black House Farm.....	Detroit.....	Bessie L. Billings..	5	62	4	38	23	14	9	83	"	.....	4	6 25-cent bottles color.
B. F. Woodman.....	Northfield.....	U. T. Patron.....	67	72	7	40	15	10	5	70	Cr'm'y	.....	5	4 25-cent bottles color.
Madelia Butter Co.....	Madelia.....	E. J. Sanderson....	29	62	3	50	25	14	9	98	"	.....	1	12 50-cent bottles Washington Butter color.
D. M. Richards.....	Glenville.....	D. M. Richards....	22	62	3	50	25	14	9	98	"	.....	2	29 30-cent bottles Washington Butter color.
D. A. Palmer.....	Zumbrota.....	D. A. Palmer.....	55	62	3	48	25	14	9	94	"	.....	3	3 12 25-cent bottles Washington Butter color.
Danielson Creamery Co.	Grove City.....	C. H. Schack.....	7	62	3	47	23	14	9	93	"	.....	4	4 25-cent bottles Washington Butter color.
												.....	5	4 25-cent bottles Washington Butter color.

J. H. HULSTIEK,  
R. D. ARUNDELL, } Judges.  
H. A. HOLMES, Referee Judge.

SCORE TABLE NO. 3.—CHEESE.

Exhibitor.	Residence	Maker of product.	Entry No.	Class.	Lot.	Flavor.	Texture.	Style.	Color.	Salting.	Total points.	Kind of cheese.	Factory or dairy	Amount of premium.	Premium.	Remarks.
Park Region Factory.	Fergus Falls	W. L. Chappell	24	63	14	36	23	10	10.2	10	89.2	Twin.....	Factory.	\$20.00	1	Minn. full crm. fact'y cheese
George Parks.....	Owatonna..	George Parks	4	63	14	34	22	7	14	8.2	85.2	Twin.....	Factory.	15.00	2	Minn. full crm. fact'y cheese
A. E. Comstock.....	Alma City..	A. E. Comstock	34	63	14	35	22	7.2	9.2	10	84.2	Twin.....	Factory.	5.00	3	Minn. full crm. fact'y cheese
John Dellfield.....	Hampton...	W. T. Hastings	2	63	14	31	17.2	8	10	8.2	85	Twin.....	Factory.	.....	.....	Minn. full crm. fact'y cheese
St. Michael's Cheese Co.	St. Michaels	John Michaels..	15	63	14	30	21	3.2	8.2	7	86	Twin.....	Factory.	.....	.....	Minn. full crm. fact'y cheese
Biscay B. C. Co.....	Biscay.....	George Ray.....	16	63	14	29	17.2	9.3	10	8	86	Twin.....	Factory.	.....	.....	Minn. full crm. fact'y cheese
Park Region Factory.	Fergus Falls	W. L. Chappell	25	63	16	37	23	10	9	10	89	Y'ung America	Factory.	15.00	1	Minn. full cr. Young Am. ch'se
A. E. Comstock.....	Alma City..	A. E. Comstock	35	63	16	38	22	8	10	10	87.2	Y'ung America	Factory.	10.00	2	Minn. full cr. Young Am. ch'se
John Dellfield.....	Hampton...	W. T. Hastings	3	63	16	36	20	8	12	9	85.2	Y'ung America	Factory.	.....	.....	Minn. full cr. Young Am. ch'se
Park Region Factory.	Fergus Falls	W. L. Chappell	25	63	16	32	20	7	10	8.2	80	Y'ung America	Factory.	.....	.....	Minn. full cr. Young Am. ch'se
S. J. Skove.....	Bergen.....	S. J. Skove.....	18	63	16	30	20	8	8.2	7	82.75	Y'ung America	Factory.	.....	.....	Minn. full cr. Young Am. ch'se
Biscay Cheese Co.....	Biscay.....	George Ray.....	16	63	16	29	16	9.2	10	7	82	Y'ung America	Factory.	.....	.....	Minn. full cr. Young Am. ch'se
Park Region Factory.	Fergus Falls	W. L. Chappell	28	63	19	37	32	10	10.2	9	89	Twin sage.....	Factory.	10.10	1	Minn. full cream sage cheese
John Frank's Factory.	Le Roy.....	Albert Karlan..	56	63	17	38	22	9.2	14.2	9	92.2	Sweitzer, large	Factory.	15.00	1	Minn. full cr. Sweitzer cheese
S. Leslie Dairy.....	Waseca.....	S. Leslie.....	53	63	15	38	22	9	11.2	10	91	Twin dairy.....	Dairy...	20.00	1	Minn. full cr. dairy cheese.
F. Shuett's Factory...	Lansing...	F. Shuett.....	54	63	24	38	22	9	11.2	10	91	Brick.....	Dairy...	.....	1	Dispatch, 1 year, special.
Park Region Factory.	Fergus Falls	W. L. Chappell	57	63	21	32	17.2	8	13	8	79.2	Brick.....	Factory.	10.00	1	Minn. full cr. brick cheese.
Park Region Factory.	Fergus Falls	W. L. Chappell	29	63	23	36	23	7	10.2	10	89.2	Twin.....	Factory.	.....	.....	grand sweepstakes.
Park Region Factory.	Fergus Falls	W. L. Chappell	31	63	24	34	22	7	10.2	10	89.2	Twin.....	Factory.	.....	.....	Cornish, Curtis & Green, cup
George Parks' Factory	Owatonna..	George Parks...	.....	63	14	.....	.....	.....	.....	.....	.....	Twin.....	Factory.	.....	.....	*Gold medal { Given by So-
George Parks' Factory	Owatonna..	George Parks...	.....	63	14	.....	.....	.....	.....	.....	.....	Twin.....	Factory.	.....	.....	*Silver medal { clety:
George Parks' Factory	Owatonna..	George Parks...	Sp'cl	63	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*Babcock milk test.
																\$85 in gold.

\* To the maker of the finest premium cheese—gold medal.

+ To the maker of the second premium cheese—silver medal.

§ To maker of cheese colored with Thatcher's Cheese Color—\$5 in gold.

W. L. Chappell, Fergus Falls, best special fancy cheese exhibit—first premium, diploma (framed) and photograph of exhibit.  
 W. T. Hastings, Hampton—these two exhibits of cheese not entered in any other class.

C. C. EMERSON, G. A. CASTLE, Judges, H. A. HOLMES, Referee Judge.  
 To maker of cheese colored with Thatcher's Cheese Color—\$5 in gold.

JOHN WILLIAMS, A. W. BINGHAM, Judges.



TABLE 1.  
Average Composition of Total Solids in the Milk of the Different Breeds.

HERD.	POUNDS PER HUNDRED OF			
	Fat.	Casein.	Sugar.	Ash.
Ayrshire.....	29.1	27.4	38.1	5.4
Guernsey.....	34.7	27.1	33.3	5.2
Holstein-Friesian.....	29.1	27.1	38.7	5.3
Jersey.....	33.3	27.6	33.8	5.2
Shorthorn.....	29.3	26.3	38.6	5.8

TABLE 2.  
Amount of Food Consumed, its Cost, and Milk Produced by Different Herds from May 1st, 1889, to October 31st, 1890.

HERD.	Total No. of days under experiment.	Number of days milking.	Total yield of milk in pounds.	TOTAL AMOUNT OF FOOD CONSUMED.										Total cost of food.	
				Hay.	Wheat bran	Corn and oat meal.	Cotton-seed meal.	Linseed meal.	Dried brewers grains.	Corn stalks.	Green fodder.	Ensilage corn.	Roots.		Pasture.
Ayrshires.....	1,510	1,359	29,845.0	lbs. 8,459	sq. 5,790½	lbs. 5,400½	lbs. 555	lbs. *259	lbs. 1,319½	lbs. 1,146	lbs. 33,980	lbs. 1,670	lbs. 703	hours 813	\$ 226.71
Guernseys.....	1,559	1,517	29,785.3	lbs. 8,269	sq. 6,616	lbs. 5,052½	lbs. 598	lbs. 132	lbs. 1,680	lbs. 1,200	lbs. 33,685	lbs. 1,280	lbs. 1,206	hours 613	232.63
Holstein-Friesians.....	1,045	869	25,365.5	lbs. 10,623	sq. 6,086	lbs. 4,025	lbs. 433	lbs. 45	lbs. 1,285	lbs. 1,150	lbs. 18,030	lbs. 1,220	lbs. 1,482	hours 341	202.12
Jerseys.....	1,251	1,116	23,064.7	lbs. 8,514	sq. 6,096	lbs. 4,748	lbs. 273	lbs. 52	lbs. 863	lbs. 1,225	lbs. 21,970	lbs. 1,475	lbs. 1,120	hours 496	201.09
Shorthorns.....	1,604	1,324	31,370.0	lbs. 9,254	sq. 6,684	lbs. 6,328	lbs. 352	lbs. 4	lbs. 1,779	lbs. 1,215	lbs. 35,428	lbs. 1,365	lbs. 952	hours 603	247.76

\*This includes 141 lbs. gluten meal and 80 lbs. oil meal.

TABLE 4.

*Average Percentage of Total Solids Fat, and Solids not Fat, in the Milk of the Different Herds for Eleven Months from December 1st, 1889, to October 31st, 1890, Inclusive.*

MONTHS.	AYRSHIRE.			GUERNSEY.			HOLSTEIN-FRIESIAN.			JERSEY.			SHORTHORN.		
	Average percent'ge of			Average percent'ge of			Average percent'ge of			Average percent'ge of			Average percent'ge of		
	Total solids.	Fat.	Solids not fat.	Total solids.	Fat.	Solids not fat.	Total solids.	Fat.	Solids not fat.	Total solids.	Fat.	Solids not fat.	Total solids.	Fat.	Solids not fat.
1889-December.....	12.53	3.61	8.94	14.64	5.11	9.53	12.26	3.64	8.62	14.72	5.02	9.70	12.85	3.81	9.04
1890-January.....	12.88	3.81	9.07	15.29	5.49	9.80	12.26	3.68	8.58	15.19	5.23	9.96	13.44	4.25	9.18
February.....	12.76	3.75	9.01	15.15	5.32	9.83	12.41	3.73	8.68	15.29	5.31	9.98	13.74	4.45	9.29
March.....	13.00	3.95	9.05	15.29	5.46	9.83	12.46	3.89	8.57	14.99	5.36	9.63	13.99	4.69	9.30
April.....	13.09	3.85	9.24	14.95	5.20	9.75	12.39	3.84	8.55	14.83	5.32	9.51	12.76	3.89	8.87
May.....	12.97	3.54	9.43	14.00	4.57	9.43	12.57	3.65	8.92	13.67	4.30	9.37	12.05	3.24	8.81
June.....	12.53	3.42	9.16	13.86	4.55	9.31	12.99	3.73	9.26	13.42	4.08	9.34	11.97	3.23	8.74
July.....	12.72	3.71	9.01	13.85	4.54	9.31	11.44	3.11	8.33	13.46	4.13	9.33	11.89	3.28	8.61
August.....	13.08	4.07	9.01	13.93	4.81	9.12	11.38	3.05	8.33	13.60	4.22	9.38	12.08	3.56	8.62
September.....	11.85	3.26	8.59	14.67	5.22	9.45	11.67	3.23	8.44	15.00	5.08	9.92	12.24	3.47	8.77
October.....	12.27	3.60	8.67	15.28	5.78	9.50	12.08	3.55	8.53	15.75	5.71	10.04	12.61	3.82	8.79
Average.....	12.71	3.69	9.02	14.62	5.09	9.53	12.17	3.55	8.62	14.54	4.89	9.65	12.69	3.79	8.90

TABLE 4.  
Average Composition (Analysis) of Milk for Eight Months.

HERD.	Specific gravity.	PERCENTAGE OF					
		Water.	Total solids.	Fat.	Casein.	Sugar.	Ash.
Ayrshire.....	1.0341	87.30	12.70	3.68	3.48	4.84	0.69
Guernsey.....	1.0350	85.52	14.48	5.02	3.92	4.80	0.75
Holstein-Friesian.....	1.0328	87.88	12.12	3.51	3.28	4.69	0.64
Jersey.....	1.0353	85.66	14.34	4.78	3.96	4.85	0.75
Shorthorn.....	1.0339	87.55	12.45	3.65	3.27	4.80	0.73

TABLE 5.  
Average Cost of Food per Quart of Milk.

HERD.	Total No. of days under experiment.	Total yield of milk.		Average daily yield of milk.		Cost of food.		Average cost of food per quart milk.
		Lbs.	Quarts	Lbs.	Quarts	Total.	Average per day.	
Ayrshire.....	1,510	29,845	13,566	19.76	9.0	\$226.71	cts. 15.0	1.66
Guernsey.....	1,559	29,785	13,539	19.10	8.7	232.63	14.9	1.71
Holstein-Friesian.....	1,045	25,366	11,530	24.27	11.0	202.12	19.3	1.75
Jersey.....	1,251	23,085	10,493	18.45	8.4	201.99	16.1	1.91
Shorthorn.....	1,604	31,370	14,259	19.56	9.0	247.76	15.4	1.71

TABLE 6.  
Average Cost of Food per Pound of Total Solids.

HERD.	Total No. of days under experiment.	Yield of milk in pounds.		Av'ge per ct. of total solids	Amt. of total solids produced in pounds.		Cost of food.		Av'ge cost of food per lb. of total solids.
		Total.	Av'ge daily.		Total.	Av'ge daily.	Total.	Av'ge daily.	
Ayrshire.....	1,510	29,845	19.76	12.71	3,793.3	2.51	\$226.71	cts. 15.0	1.66
Guernsey.....	1,559	29,785	19.10	14.62	4,354.3	2.79	232.63	14.9	1.71
Holstein-Friesian..	1,045	25,366	24.27	12.17	3,087.0	2.95	202.12	19.3	1.75
Jersey.....	1,251	23,085	18.45	14.54	3,356.5	2.68	201.99	16.1	1.91
Shorthorn.....	1,604	31,370	19.56	12.69	3,980.9	2.48	247.76	15.4	1.71

TABLE 7.  
Average Cost of Food per Pound of Fat.

HERD.	Total No. of days under experiment.	Yield of milk in pounds.		Av'ge per ct. of fat.	Amt. of fat produced in pounds.		Cost of food.		Av'ge cost of food per lb. of fat.
		Total.	Av'ge daily.		Total.	Av'ge daily.	Total.	Av'ge daily.	
Ayrshire.....	1,510	29,845	19.76	3.69	1,101.3	0.73	\$226.71	cts. 15.0	2.00
Guernsey.....	1,559	29,785	19.10	5.09	1,516.0	0.97	232.63	14.9	2.05
Holstein-Friesian..	1,045	25,366	24.27	3.55	900.5	0.86	202.12	19.3	2.04
Jersey.....	1,251	23,085	18.45	4.89	1,128.8	0.90	201.99	16.1	2.00
Shorthorn.....	1,604	31,370	19.56	3.79	1,188.9	0.74	247.76	15.4	2.00

Studied under the conditions which now largely rule in the sale of the distinct dairy products, milk and butter, and which must define the present methods of comparison of breeds from the commercial standpoint, the results show that all the breeds do not present the same points of comparison, but are divided into distinct classes, one milk, the other butter. In the milk class the average cost of a quart of milk is less than in the butter class, and in the butter class the average cost of a pound of butter is less than in the milk class.



## DIVISION G.—HONEY, BEES AND APIARIAN SUPPLIES.

Premiums awarded, \$277.00.

J. P. WEST, Hastings, Superintendent.

B. TAYLOR,	} Judges.
W. J. TINGLEY,	
L. E. DAY,	

## CLASS 64.—HONEY.

	1st prem.	2d prem.
Most attractive display of comb honey, N. P. Aspinwall, Harrison .....	\$15.00	
Most attractive display of comb honey, John Turnbull, La Crescent.....		\$10.00
Most attractive display of comb honey, R. Knapheide, St. Paul.....	Third	8.00
Most attractive display of extracted honey, J. M. Dondua, Alexandria.....	15.00	
Most attractive display of extracted honey, William Urie, Minneapolis.....		10.00
Most attractive display of extracted honey, Cyrus C. Aldrich, Morristown.....	Third	8.00
Display of twenty pounds comb honey, quality and manner of putting up for market considered, N. P. Aspinwall, Harrison.....	9.00	
Display of twenty pounds comb honey, quality and manner of putting up for market considered, J. M. Dondua, Alexandria.....		6.00
Display of twenty pounds comb honey, quality and manner of putting up for market considered, J. G. Bass, Hamline.....	Third	4.00
Display twenty-five pounds extracted honey, quality and manner of putting up for market considered, J. M. Dondua, Alexandria.....	9.00	
Display twenty-five pounds extracted honey, quality and manner of putting up for market considered, Wm. Urie, Minneapolis .....		6.00
Display twenty-five pounds extracted honey, quality and manner of putting up for market considered, Cyrus C. Aldrich, Morristown.....	Third	4.00

## CLASS 65.—BEES, SUPPLIES, ETC.

Single nucleus of Italian bees, Wm. Urie, Minneapolis...	7.00	
Single nucleus of Italian bees, John Trumbull, La Crescent		5.00
Single nucleus of Black bees, Cyrus C. Aldrich, Morristown	7.00	
Single nucleus of Black bees, Wm. Urie, Minneapolis...		5.00
Single nucleus of Carniolan bees, Wm. H. Bright, Mazeppa	7.00	
Collection of queens of different races, Wm. H. Bright, Mazeppa.....	12.00	
Collection of queens of different races, Wm. Urie, Minneapolis....		8.00
Most attractive display of beeswax, J. M. Dondua, Alexandria.....	7.00	
Most attractive display of beeswax, Wm. Urie, Minneapolis		5.00
Specimen of beeswax, not less than ten pounds, soft, bright, yellow wax to have preference, J. M. Dondua, Alexandria	6.00	
Specimen of beeswax, not less than ten pounds, soft, bright, yellow wax to have preference, N. P. Aspinwall, Harrison		3.00
Honey Vinegar, not less than one gallon, shown in glass, C. C. Aldrich, Morristown .....	5.00	
Honey Vinegar, not less than one gallon, shown in glass, Mrs. N. J. Leavitt, Minneapolis .....		3.00

	1st prem.	2d prem.
Display of Apiarian supplies and implements, C. C. Aldrich, Morristown .....	\$10.00	
Largest and best variety of uses to which honey may be applied, illustrated by individual samples of the different things into which it enters as a component, for example, canned fruits, cakes, pastry, meats, vinegar, etc., Wm. Urie, Minneapolis .....	15.00	
Largest and best variety of uses to which honey may be applied, illustrated by individual samples of the different things into which it enters as a component, for example, canned fruits, cakes, pastry, meats, vinegar, etc., Mrs. N. J. Leavitt, Minneapolis .....		\$8.00

*Grand Sweepstakes.*

Largest, best, most interesting, attractive and instructive exhibition in this department, all things considered, Wm. Urie, Minneapolis .....	25.00	
Largest, best, most interesting, attractive and instructive exhibition in this department, all things considered, J. M. Dondua, Alexandria .....		15.00
Largest, best, most interesting, attractive and instructive exhibition in this department, all things considered, Wm. H. Bright, Mazeppa .....	Third	10.00
Total .....	\$277.00	

## DIVISION H.—HOUSEHOLD FABRICS.

Premiums awarded.....\$432.50

J. H. BURWELL, St. Paul, Superintendent.	
MRS. CROSSLEY, St. Paul, Assistant Superintendent.	
MISS ISABELLA L. DOUGAN, )	Judges of Class 66.
MISS MINNIE C. ALBRO, )	
MISS ALICE GARRATT, )	
MRS. H. L. SMITH, )	Judges of Class 67.
MRS. E. W. GOODNER, )	
MISS LIZZIE A. HUSSE, )	

## CLASS 66.—LADIES' TEXTILE WORK, ETC.

Display of fancy work, made up and otherwise.—Pastel portrait, size 18x22, beautifully framed, valued at \$40.00, offered by Harry Shepherd & Co., St. Paul.. Mrs. N. L. Bryant, St. Paul.

	1st prem.	2d prem.
Apron, child's, Mrs. J. F. Geary, St. Paul .....	\$1.00	
Apron, hemstitched, Miss Lizzie Shott, St. Paul .....	1.00	
Apron, fancy, Mrs. M. P. Stout, Minneapolis .....	2.00	
Apron, fancy, Miss Laura Foster, St. Paul .....		\$1.00
Bag, fancy, Mrs. J. F. Geary, St. Paul .....	1.00	
Bag, fancy, Mrs. T. L. Morgan, St. Paul .....		.50
Bag, shopping, Mrs. E. A. Carter, St. Anthony Park .....	1.00	
Bag, shopping, Mrs. Grimschied, St. Paul .....		.50
Bag, work, Mrs. J. F. Geary, St. Paul .....		.50
Banner, (wall) fancy, Mrs. N. L. Bryant, St. Paul .....	2.00	
Banner, (wall) fancy, Mrs. E. A. Carter, St. Anthony Park .....		1.00
Basket, work, Mrs. G. E. Cooper, St. Paul .....	2.00	
Basket, work, Mrs. J. Allen, Hamline .....		1.00
Braiding, specimen, Mrs. E. A. Carter, St. Anthony Park .....	1.00	
Braiding, specimen, Miss M. T. Flegle, Minneapolis .....		.50
Case, glove, Mrs. G. A. Lawton, St. Paul .....	1.00	

	1st prem.	2d prem.
Case, glove, Mrs. O. N. Dunham, Minneapolis.....		\$ .50
Case, photograph, Mrs. W. I. Stager, Hamline.....	\$1.00	
Case, photograph, Mrs. J. F. Geary, St. Paul.....		.50
Case, slipper, Mrs. G. O. Lawton, St. Paul.....	2.00	
Case, slipper, Mrs. E. A. Carter, St. Anthony Park.....		1 00
Cases, (pillow) fancy, Mrs. A. Peck, St. Paul.....	2.00	●
Cases, (pillow) fancy, Miss Laura Foster, St. Paul.....		1.00
Cases, (pillow) embroidered, Miss Agatha Schweizer, St. Paul.....		1.00
Cases, (pillow) drawn work, Mrs. E. C. Baxter, Fergus Falls.....	2.00	
Cases, (pillow) hemstitched, Miss Mary Peterson, Fergus Falls.....	2.00	
Cases, (pillow) hemstitched, Mrs. S. M. Sterrett, Lake City.....		1.00
Comforter, tacked, Miss E. C. Tate, St. Paul.....	2.00	
Comforter, tacked, Mrs. W. F. Cross, Hamline.....		1.00
Cloth, lunch, Mrs. O. N. Dunham, Minneapolis.....	2.00	
Cloth, lunch, Mrs. N. L. Bryant, St. Paul.....		1.00
Cloth, (tray) embroidered, Mrs. L. W. French, St. Paul...	2.00	
Cloth, (tray) embroidered, Miss Nettie Coburn, St. Paul..		1.00
Cloth, (tray) drawn, Mrs. M. P. Stout, Minneapolis.....	2.00	
Cloth, (tray) drawn, Miss Allie Dupont, Minneapolis.....		1.00
Centerpiece, linen, emb., Mrs. M. P. Stout, Minneapolis...	2.00	
Centerpiece, linen, emb., Mrs. O. N. Dunham, M'pls....		1.00
Cover, sideboard, made up, Mrs. M. P. Stout, Minneapolis	3.00	
Cover, sideboard, made up, Mrs. E. C. Baxter, Fergus Falls		1.50
Cover, (table) drawn work, Mrs. E. C. Baxter, Fergus Falls	3.00	
Cover, (table) Japanese, made up, Mrs. J. F. Geary, St. Paul.....	3.00	
Cover, (table) fancy, made up, Mrs. W. J. Aries, Rochester	3.00	
Crochet work, collection, Miss Alice Filbert, Minneapolis	3.00	
Crochet work, collection, Mrs. T. L. Morgan, St. Paul....		1.50
Crochet work, cotton lace, one yard or more, Mrs. M. L. Baldwin, Minneapolis.....	1.00	
Crochet work, cotton lace, one yard or more, Mrs. T. L. Morgan, St. Paul.....		.50
Crochet work, silk lace, one yard or more, Mrs. C. H. McGill, St. Anthony Park.....	1.00	
Crochet work, silk lace, one yard or more, Mrs. J. W. Hawkins, Minneapolis.....		.50
Crochet work, wool lace, one yard or more, Mrs. M. P. Stout, Minneapolis.....	1.00	
Crochet work, fascinator, Agatha Schmizer, St. Paul.....		.50
Cushions, toilet, Mrs. Montant, Hamline.....	1.00	
Cushions, toilet, Mrs. O. N. Dunham, St. Paul.....		.50
Cushions, toilet, with bottles, Miss Allie Ballard, St. Paul		1.00
Doylies, drawn work, one-half dozen, Mrs. M. P. Stout, Minneapolis.....	2.00	
Doylies, drawn work, one-half dozen, Mrs. C. S. Bixby, St. Paul.....		1.00
Doylies, embroidered, one-half dozen, Mrs. G. R. Fishleigh, St. Paul.....	2.00	
Doylies, embroidered, one-half dozen, Mrs. L. W. French, St. Paul.....		1.00
Doylies, etched, one-half dozen, Mrs. J. O. Lawton, St. Paul	2.00	
Doylies, hemstitched, one-half dozen, Mrs. E. C. Childs, Minneapolis.....	2.00	
Doylies, hemstitched, one-half dozen, Miss Mary Peterson, Fergus Falls.....		1.00
Darning, specimen, Miss Willa De Hoan, St. Paul.....	1.00	
Drawn work, specimen, Mrs. M. P. Stout, Minneapolis...	2.00	
Drawn work, specimen, Miss M. Peterson, Fergus Falls..		1.00
Embroidery, golden, Mrs. W. J. Aries, Rochester.....	2.00	



	1st prem	d prem
Embroidery, Kensington, silk, Mrs. E. C. Baxter, Fergus Falls.....	\$2.00	
Embroidery, Kensington, silk, Mrs. J. F. Geary, St. Paul..		\$1.00
Embroidery, Kensington, worsted, Mrs. C. C. Schuble, St. Paul.....	2.00	
Embroidery, solid cotton, Miss Mary Peterson, Fergus Falls.....	2.00	
Embroidery, solid cotton, Mrs. Blouth, St. Paul.....		1.00
Embroidery, solid linen, Flora Jackson, St. Paul.....	2.00	
Embroidery, solid linen, Mrs. E. C. Baxter, Fergus Falls..		1.00
Embroidery, solid silk, Mrs. M. P. Stout, Minneapolis....	2.00	
Embroidery, solid silk, Mrs. J. F. Geary, St. Paul.....		1.00
Etching in silk, Mrs. S. M. Sterrett, Lake City.....	2.00	
Etching in silk, Mrs. M. Peterson, Fergus Falls.....		1.00
Etching in cotton, Miss M. T. Flegle, Minneapolis.....	2.00	
Etching in cotton, Mrs. S. M. Sterrett, Lake City.....		1.00
Etching in linen, Mrs. W. J. Aries, Rochester.....	2.00	
Etching in linen, Miss M. Peterson, Fergus Falls.....		1.00
Fire screen, mounted, Mrs. J. F. Geary, St. Paul ..	3.00	
Fire screen, mounted, Mrs. O. N. Dunham, St. Paul.....		1.50
Foot rest, mounted, Mrs. E. A. Fillmore, Minneapolis ..	3.00	
Handkerchief, drawn work, Mrs. E. C. Childs, Minneapolis.	1.00	
Handkerchief, drawn work, Mrs. G. E. Cooper, St. Paul..		.50
Handkerchief, embroidered, Mrs. E. C. Childs, Minneapolis.	1.00	
Handkerchief, embroidered, Mrs. G. E. Cooper, St. Paul..		.50
Handkerchief, fancy, Mrs. Ehrmantrou, St. Paul.....	1.00	
Handkerchief, fancy, Willa De Hoan, St. Paul .....		.50
Handkerchief, lace, hand made, Mrs. J. F. Geary, St. Paul	2.00	
Handkerchief, lace, hand made, Mrs. J. F. Geary, St. Paul	1.00	
Knitting, collection, Alice E. Otis, St. Paul.....	2.00	
Knitting, collection, Mrs. M. L. Baldwin, Minneapolis...		1.00
Knitting, lace, cotton, Mrs. Montaut, Hamline.....	2.00	
Knitting, lace, cotton, Mrs. M. L. Baldwin, Minneapolis..		1.00
Knitting, lace, silk, Mrs. M. L. Baldwin, Minneapolis....	2.00	
Knitting, lace, silk, Mrs. M. L. Baldwin, Minneapolis....		1.00
Knitting, lace, wool, Mrs. M. J. Weed, St. Paul .....	2.00	
Knitting, lace, wool, Mrs. G. O. Lawton, St. Paul.....		1.00
Lace, applique, Mrs. J. F. Geary, St. Paul.....	2.00	
Lambrequin, mantel, Mrs. E. A. Carter, St. Anthony P'k.	3.00	
Lambrequin, mantel, Mrs. John Humble, St. Paul.....		1.50
Lambrequin, window, Mrs. E. A. Carter, St. Anthony P'k.	3.00	
Lambrequin, window, Mrs. E. C. Palmer, St. Paul.....		1.50
Mat, lamp, Mrs. O. N. Dunham, St. Paul.....	2.00	
Mat, lamp, Miss M. Peterson, Fergus Falls.....		1.00
Mat, toilet, Miss Sue E. Hoyt, Hamline.....	2.00	
Mat, toilet, Mrs. O. N. Dunham, St. Paul.....		1.00
Mat, table, Mrs. E. C. Baxter, Fergus Falls.....	2.00	
Mat, table, Mrs. M. P. Stout, Minneapolis.....		1.00
Mittens, (men's) wool, knitted, Mrs. Putman, Hamline...	2.00	
Mittens, (men's) wool, knitted, Mrs. Blackmore, St. Paul.		1.00
Mittens, (ladies') wool, knitted, Mrs. Humble, St. Paul...	2.00	
Mittens, (ladies') wool, knitted, Mrs. Humble, St. Paul...		1.00
Napkins, embroidered, one dozen, Mrs. G. E. Cooper, St. Paul .....	2.00	
Net, darned, specimen, Mrs. M. L. Baldwin, Minneapolis.	1.00	
Net, darned, specimen, Mrs. F. E. Smith, Hamline.....		.50
Pillow, sofa, fancy, made up, Mrs. D. F. Polk, St. Anthony Park.....	3.00	
Pillow, sofa, fancy, made up, Miss Bernice Cameron, St. Anthony Park.....		1.50
Pillow, Japanese, made up, Miss Allie Ballard, St. Paul..		1.00
Pillow, chair, fancy, Mrs. E. J. Falk, Minneapolis.....		1.00
Portieres, made up, Mrs. M. Britts.....	3.00	

	1st. prem.	2d. prem.
Quilt, log cabin, silk, Mrs. John Wilcox, St. Anthony Park.....		\$1.00
Quilt, log cabin, wool, Mrs. L. O. Godkin, St. Paul.....	\$2.00	
Quilt, log cabin, wool, Mrs. A. S. Babcock, St. Anthony Park.....		1.00
Quilt, patchwork, cotton, Mrs. M. O'Neil, St. Paul.....	2.00	
Quilt, patchwork, cotton, Mrs. A. Peck, St. Paul.....		1.00
Quilt, patchwork, silk, Mrs. Wm. Leighton, St. Paul.....	3.00	
Quilt, patchwork, silk, Mrs. G. R. Fishleigh, St. Paul.....		2.00
Quilt, quilted, white cotton, Mrs. A. J. Ayers, Comoville.....	2.00	
Quilt, quilted, white cotton, Mrs. T. W. Wallace, Hamline.....		1.00
Quilting, specimen, Mrs. D. F. Polk, St. Anthony Park....	2.00	
Quilting, specimen, Mrs. W. F. Cross, Hamline.....		1.00
Robe, slumber, knitted, Mrs. S. M. Sterrett, Lake City...	2.00	
Robe, slumber, knitted, Mrs. D. A. Church, St. Paul.....		1.00
Robe, slumber, Japanese, Mrs. A. S. Babcock, St. Anthony Park.....		1.00
Robe, lap, Mrs. O. N. Dunham, St. Paul.....	2.00	
Rug, hearth, rag, Miss Sue E. Hoyt, Hamline.....	2.00	
Rug, hearth, rag, Mrs. H. A. Isherwood, St. Paul.....		1.00
Rug, hearth, wool, Mrs. Ole Anderson, St. Paul.....	2.00	
Rug, parlor, wool, Vina Harden, Hamline.....	2.00	
Rug, parlor, wool, Mrs. E. A. Fillmore, Minneapolis.....		1.00
Runner, table, embroidered, Mrs. E. C. Childs, Minneapolis.....	2.00	
Runner, table, embroidered, Mrs. E. C. Bailey, Fergus Falls.....		1.00
Scarf, bureau, embroidered, Mrs. M. P. Stout, Minneapolis.....	2.00	
Scarf, bureau, embroidered, Mrs. Conham, St. Paul.....		1.00
Scarf, bureau, etched, Miss M. Peterson, Fergus Falls....	2.00	
Scarf, sideboard, embroidered, Mrs. O. N. Dunham, St. Paul.....	2.00	
Scarf, sideboard, embroidered, Mrs. E. A. Fillmore, Minneapolis.....		1.00
Scarf, sideboard, etched, Miss Mary Peterson, Fergus Falls.....	2.00	
Scarf, table, embroidered, Mrs. M. P. Stout, Minneapolis.....	2.00	
Scarf, easel, fancy, Mrs. S. M. Sterrett, Lake City.....	2.00	
Scarf, easel, fancy, Mrs. A. M. Wiatt, Minneapolis.....		1.00
Sewing, hand, different stitches, tucking and hemming, Mrs. M. T. Flegle, Minneapolis.....	3.00	
Sham, pillow, embroidered, Mrs. Blouth, St. Paul.....	2.00	
Sham, pillow, embroidered, Miss Hemanam, St. Paul.....		1.00
Sham, pillow, etched, Mrs. A. Petterson, Winona.....	2.00	
Sham, pillow, etched, Mrs. N. L. Baldwin, Minneapolis...		1.00
Sham, pillow, fancy, Mrs. C. C. Schuble, St. Paul.....	2.00	
Sham, pillow, fancy, Mrs. C. E. Norton, Minneapolis.....		1.00
Shawl, crotcheted, Mrs. S. M. Sterrett, Lake City.....	2.00	
Shawl, crotcheted, Mrs. G. E. Cooper, St. Paul.....		1.00
Shawl, embroidered, Mrs. M. T. Flegle, Minneapolis.....	3.00	
Shawl and cape, knitted, Mrs. J. Wilcox, St. Anthony Park.....	1.00	
Shawl and cape, knitted, Mrs. D. F. Polk, St. Anthony Park.....		.50
Skirt, crotcheted, Mrs. S. M. Sterrett, Lake City.....	2.00	
Skirt, crotcheted, Miss Jennie Wilcox, St. Anthony Park..		1.00
Skirt, flannel, embroidered, Mrs. M. P. Stout, Minneapolis.....	2.00	
Skirt, knitted, Mrs. M. L. Baldwin, Minneapolis.....	2.00	
Spread, crocheted, Marion Murrey, St. Paul.....	3.00	
Spread, crocheted, Mrs. Montaut, Hamline.....		1.50
Spread, knitted, Mrs. N. L. Baldwin, Minneapolis.....	3.00	
Spread, knitted, Mrs. Geo. Ossman, West St. Paul.....		1.50
Socks, (men's) wool knitted, Mrs. Putman, Hamline.....		1.00
Stockings, (ladies') cotton knitted, Mrs. N. L. Baldwin, Minneapolis.....	2.00	
Stockings, (ladies') cotton knitted, Miss Mary T. Duffy, St. Paul.....		1.00
Stockings, (ladies') silk knitted, Mrs. M. P. Start, Minneapolis.....	2.00	

	1st prem.	2d prem.
Stockings, (ladies') wool knitted, Mrs. N. L. Baldwin, Minneapolis.....	\$2.00	
Stockings, (ladies') wool knitted, Mrs. N. L. Baldwin, Minneapolis.....		\$1.00
Tidy, fancy, any material, Mrs. T. L. Morgan, St. Paul...	2.00	
Tidy, fancy, any material, Mrs. Montaut, Hamline.....		1.00
Tidy, silk, Mrs. Ehermantrou, St. Paul.....	2.00	
Tidy, silk, Mrs. M. T. Duffy, St. Paul.....		1.00
Tidy, cotton, Mrs. Conham, St. Paul.....	1.00	
Tidy, cotton, Mrs. S. Huntington, Windom.....		.50
Tidy, linen, Mrs. O. N. Dunham, St. Paul.....	1.00	
Tidy, linen, Mrs. E. A. Carter, St. Anthony Park.....		.50
Tidy, wool, Mrs. E. A. Carter, St. Anthony Park.....		.50
Tidy, crocheted, Mrs. Montaut, Hamline.....	1.00	
Tidy, crocheted, Mrs. S. M. Sterrett, Lake City.....		.50
Tapestry picture, worsted, Mrs. S. M. Sterrett, Lake City	3.00	
Towels, embroidered, one-half dozen, Mrs. G. E. Cooper, St. Paul.....	2.00	
Towels, embroidered, one-half dozen, Mrs. J. F. Geary, St. Paul.....		1.00
Towels, drawn work, Mrs. M. P. Stout, Minneapolis.....	2.00	
Towels, drawn work, Mrs. E. A. Baxter, Fergus Falls....		1.00
Towels, hemstitched, Mrs. D. F. Polk, St. Anthony Park,	2.00	
Towels, hemstitched, Mrs. E. A. Baxter, Fergus Falls....		1.00
Underwear (ladies'), knitted, Mrs. G. O. Lawton, St. Paul,	3.00	
Underwear (children's), knitted, Mrs. G. O. Lawton, St. Paul.....	2.00	
Underwear (children's), knitted, Mrs. M. J. Weed, St. Paul,		1.00
Worsted work on canvas, Mrs. J. F. Geary, S. Paul.....	2.00	
Worsted work on canvas, Mrs. N. L. Baldwin, Minneapolis,		1.00

## CLASS 67.—FINE ART WORK.

(Open to amateurs only.)

Hair work (ornamental, etc.) collection, Mrs. G. O. Lawton, St. Paul.....	3.00	
Hair work (ornamental, etc.) collection, Agatha Schweizer, St. Paul.....		1.50
Hand-painted china, largest and best collection by one person, Mrs. L. J. Templeton.....	3.00	
Hand-painted china, largest and best collection by one person, Mrs. C. J. Thompson, St. Paul.....		1.50
Finest collection of paintings (oil or water), St. Paul Art Club, diploma.....	10.00	
Finest collection of paintings (oil or water), Mrs. A. S. Babcock, St. Anthony Park.....		5.00
Miscellaneous historic paintings, Mrs. A. S. Babcock, St. Anthony Park.....	3.00	
Portrait, from sitting, Mrs. A. S. Babcock, St. Anthony Park.....	3.00	
Portrait, from sitting, Alice Thorson, St. Paul.....		1.50
Minnesota landscape, from nature, St. Paul Art Club....	3.00	
Minnesota landscape, from nature, Nellie Stephenson, St. Paul.....		1.50
Marine view, St. Paul Art Club.....	3.00	
Marine view, Lucy Jacobson, St. Paul.....		1.50
Figure or figures, St. Paul Art Club.....	3.00	
Figure or figures, Mrs. W. W. Phelps, St. Anthony Park..		1.50
Animal, from nature, Mrs. G. E. Cooper, St. Paul.....	3.00	
Animal, from nature, Agatha Schweizer, St. Paul.....		1.50
Fruit, from nature, Mrs. W. W. Phelps, St. Anthony Park	2.00	
Fruit, from nature, Elmanette Carlton, Minneapolis.....		1.00
Flowers, from nature, Elmanette Carlton, Minneapolis...	2.00	



	1st prem.	2d prem.
Flowers, from nature, St. Paul Art Club.....		\$1.00
Painting, still life, from nature, St. Paul Art Club.....	\$2 00	
Painting, still life, from nature, St. Paul Art Club.....		1.00
Crayon, Camelia Jenson, St. Paul.....	2.00	
Crayon, Mrs. W. F. Cross, Hamline....		1.00
Pastel, Lydia M. Rich, Hamline.....	2.00	
Pastel, Elmanette Carlton, Minneapolis.....		1.00
Sepia, St. Paul Art Club.....	2.00	
Sepia, Frances Carlton, Minneapolis.....		1.00
Painting on glass, Miss Lottie Beck, Brown's Valley ....	2.00	
Painting on glass, Mrs. G. E. Cooper, St. Paul.....		1.00
Painting on satin, Miss Jennie Wilcox, St. Anthony Park.	2.00	
Painting on satin, Mrs. E. A. Carter, St. Anthony Park..		1.00
Painting on silk, St. Paul Art Club.....	2.00	
Painting on silk, Miss Jennie Wilcox, St. Anthony Park..		1.00
Painting on velvet or plush, St. Paul Art Club .....	2.00	
Painting on velvet or plush, Elmanette Carlton, M'n'p'l's.		1.00
Painting on tile, Lucy Jacobson, St. Paul .....	2.00	
Painting on tile, Mrs. J. F. Geary, St. Paul....		1.00
Painting on mirror frame, St. Paul Art Club.....	2.00	
Painting on mirror frame, Mrs. W. W. Phelps, St. An- thony Park .....		1.00
Painting on chamois, Mrs. S. J. Perry, Excelsior.....	2.00	
Painting on chamois, Nellie Stephenson, St. Paul. ....		1.00
Painting on bolting cloth, Nellie Stephenson, St. Paul ...	2.00	
Painting on bolting cloth, Mrs. G. E. Cooper, St. Paul....		1.00
Photographs, largest display and best collection of cabi- nets, (portraits and views), all the work competing to be that of the exhibitor, Harry Shepherd, St. Paul .....		Diploma.

## CLASS 68.—FACTORY MADE.

No entries.

Total ..... \$432.50

## DIVISION J.—FRUITS AND FLOWERS.

Premiums awarded.....\$777.00

(Under the Auspices of the State Horticultural Society.)

J. M. UNDERWOOD, Lake City, Superintendent.

F. G. GOULD,	}	Judges of Class 69, Professionals.
J. G. BASS,		
J. S. HARRIS,	}	Judges of Class 69, Amateurs and Russian.
S. D. HELLMAN,		
J. O. BARRETT		
J. G. BASS,		
F. G. GOULD,		
O. F. RAND,		Judge of Class 70.
C. L. SMITH,	}	Judges of Class 71.
DITUS DAY,		
WYMAN ELLIOT,	}	Judges of Class 72
SAM'L B. GREEN,		

## CLASS 69.—APPLES.

Sweepstakes.

1st prem. 2d prem.

Collection, may or may not be grown by exhibitor, R. C. Keel, Rochester. ....	\$20.00	
Collection, may or may not be grown by exhibitor, Wm. Somerville, Viola.....		\$15.00
Collection, may or may not be grown by exhibitor, J. S. Harris, La Crescent.....	Third,	10.00

## BY PROFESSIONAL GROWERS AND NURSERYMEN.

	1st prem.	2d prem.
Collection of apples, (hybrids and Siberians excepted) not to exceed twenty varieties, Wm. Somerville, Viola.....	\$15.00	
Collection of apples, (hybrids and Siberians excepted) not to exceed twenty varieties, J. S. Harris, La Crescent.....		\$10.00
Collection of Siberians or hybrids, not to exceed ten varieties, Wm. Somerville, Viola.....	8.00	

*Single plates.*

Best plate of apples, Wm. Somerville, Viola.....	3.00	
Beech's sweet, O. F. Brand, Faribault.....	2.00	
Brier, sweet, O. F. Brand, Faribault.....	2.00	
Briar, sweet, A. W. Lathan, Excelsior.....		1.00
Drake, O. F. Brand, Faribault.....	2.00	
Duchess of Oldenberg, Wm. Somerville, Viola.....	2.00	
Duchess of Oldenberg, A. W. Latham, Excelsior.....		1.00
Early Strawberry, Wm. Somerville, Viola.....	2.00	
Elgin Beauty, Wm. Somerville, Viola.....	2.00	
Florence, Wm. Somerville, Viola.....	2.00	
Geo. Miller, O. F. Brand, Faribault.....	2.00	
Giant Swar, M. Pearce, Chowen.....	2.00	
Haas, Wm. Somerville, Viola.....		1.00
Haas, J. S. Harris, LaCrescent.....	2.00	
Hyslop, O. F. Brand, Faribault.....	2.00	
Hyslop, Wm. Mackintosh, Langdon.....		1.00
Fameuse, J. S. Harris, LaCrescent.....	2.00	
McMahon's White, M. Pearce, Chowen.....	2.00	
Grange, O. F. Brand, Faribault.....	2.00	
Orange, A. W. Latham, Excelsior.....		1.00
Peach, O. F. Brand, Faribault.....	2.00	
Peach, Wm. Somerville, Viola.....		1.00
Powers, Wm. Somerville, Viola.....	2.00	
Powers, M. Pearce, Chowen.....		1.00
Sweet Russett, W. Somerville, Viola.....	2.00	
Petofsky, J. S. Harris, LaCrescent.....	2.00	
Petofsky, Wm. Somerville, Viola.....		1.00
Transcendent, A. W. Latham, Excelsior.....	2.00	
Transcendent, Wm. Mackintosh, Langdon.....		1.00
Virginia, Wm. Somerville, Viola.....	2.00	
Wealthy, M. Pearce, Chowan.....	2.00	
Wealthy, J. S. Harris, LaCrescent.....		1.00
Whitney, O. F. Brand, Faribault.....	2.00	
Whitney, M. Pearce, Chowen.....		1.00

## AMATEURS OR FARMERS.

(Market gardeners excluded.)

Collection of apples, Mrs. C. W. Gordon, Longlake.....	10.00	
Collection of apples, R. C. Keel, Rochester.....		7.00
Collection of apples, W. L. Parker, Farmington.....	Third,	4.00
Autumn, three varieties, R. C. Keel, Rochester.....	5.00	
Autumn, three varieties, Sidney Casp, Hammond.....		3.00
Autumn, three varieties, Geo. Miller, Richland.....	Third,	2.00
Winter, three varieties, Sidney Casp, Hammond.....	5.00	
Winter, three varieties, R. C. Keel, Rochester.....		3.00
Winter, three varieties, Geo. Miller, Richland.....	Third,	2.00

## SINGLE PLATES.

Best plate of apples, grown in Minnesota, W. L. Parker, Farmington.....	3.00	
Best plate of apples, grown in Minnesota, R. C. Keel, Rochester.....		1.50

	1st prem.	2d prem.
Beech's Sweet, L. E. Day, Farmington.....	\$2.00	
Beech's Sweet, R. C. Keel, Rochester..		\$1.00
Brier Sweet, L. E. Day, Farmington.....	2.00	
Brier Sweet, H. J. Ludlow, Worthington.....		1.00
Drake, Ditus Day, Farmington.....	2.00	
Duchess of Oldenberg, Geo. H. Smith, Long Lake.....	2.00	
Duchess of Oldenberg, W. L. Parker, Farmington.....		1.00
Early Strawberry, R. C. Keel, Rochester....	2.00	
Early Strawberry, W. L. Parker, Farmington.....		1.00
Elgin Beauty, Sidney Casp, Hammond.....	2.00	
Elgin Beauty, R. C. Keel, Rochester.....		1.00
Fameuse, L. E. Day, Farmington.....	2.00	
Fameuse, Ditus Day, Farmington.....		1.00
Florence, R. C. Keel, Rochester.....	2.00	
Florence, Mrs. C. W. Gordon, Long Lake.....		1.00
Geo. Miller, H. F. Miller, Faribault.....	2.00	
Geo. Miller, Geo. Miller, Richland.....		1.00
Haas, L. E. Day, Farmington.....	2.00	
Haas, Ditus Day, Farmington.....		1.00
Hyslop, R. C. Keel, Rochester.....	2.00	
Hyslop, H. F. Miller, Faribault.....		1.00
McMahon's White, Sidney Casp, Hammond.....	2.00	
McMahon's White, R. C. Keel, Rochester....		1.00
Meador's Winter, L. E. Day, Farmington.....	2.00	
Meador's Winter, H. F. Miller, Faribault.....		1.00
Minnesota, R. C. Keel, Rochester.....	2.00	
Minnesota, U. L. Parker, Farmington.....		1.00
Orange, R. Knapheide, St. Paul.....	2.00	
Orange, L. E. Day, Farmington.....		1.00
Peach, Ditus Day, Farmington.....	2.00	
Peach, H. F. Miller, Faribault.....		1.00
Powers', R. C. Keel, Rochester.....	2.00	
Powers', L. E. Day, Farmington.....		1.00
Sweet Russet, R. C. Keel, Rochester.....	2.00	
Sweet Russet, H. F. Miller, Faribault.....		1.00
Tetofsky, Francis Dick, Afton.....	2.00	
Tetofsky, R. C. Keel, Rochester.....		1.00
Transcendent, H. J. Ludlow, Worthington.....	2.00	
Transcendent, U. L. Parker, Farmington.....		1.00
Virginia, U. L. Parker, Farmington.....	2.00	
Virginia, Ditus Day, Farmington.....		1.00
Wealthy, Sidney Casp, Hammond.....	2.00	
Wealthy, R. C. Keel, Rochester.....		1.00
Whitney, H. F. Miller, Faribault.....	2.00	
Whitney, U. L. Parker, Farmington.....		1.00

## RUSSIAN APPLES.

*Professional and non-Professional Cultivators.*

Collection new Russian apples, Wm. Somerville, Viola..	10.00	
Collection new Russian apples, R. C. Reel, Rochester.....		5.00
Collection new Russian apples, Andrew Peterson, Waconia	Third,	3.00

*Single Plates.*

Antonovka, Andrew Peterson, Waconia.....	2.00	
Charlamoff, R. C. Keel, Rochester.....	2.00	
Charlamoff, Andrew Peterson, Waconia.....		1.00
Golden White, R. C. Keel, Rochester.....	2.00	
Golden White, Sidney Casp, Hammond.....		1.00
Green (Selonka), Wm. Somerville, Viola.....	2.00	
Green (Selonka), R. C. Keel, Rochester.....		1.00
Hibernal, Wm. Somerville, Viola.....	2.00	
Hibernal, Sidney Casp, Hammond.....		1.00
Longfield, R. C. Keel, Rochester.....	2.00	



	1st prem.	2d prem.
Longfield, O. F. Brand, Faribault.....		\$1.00
Lieby, M. Pearce, Chowen.....	\$2.00	
Lieby, Andrew Peterson, Waconia.....		1.00
Ostrakoff, Wm. Somerville, Viola.....	2.00	
Ostrakoff, R. C. Keel, Rochester.....		1.00
Red Black, Wm. Somerville, Viola.....	2.00	
Red Black, R. C. Keel, Rochester.....		1.00
Red Anis, Wm. Somerville, Viola.....	2.00	
Red Anis, R. C. Keel, Rochester.....		1.00
Red Queen, R. C. Keel, Rochester.....	2.00	
Red Queen, Wm. Somerville, Viola.....		1.00
Repka, R. C. Keel, Rochester.....	2.00	
Repka, Wm. Somerville, Viola.....		1.00
Russian Autumn, Wm. Somerville, Viola.....	2.00	
Russian Autumn, R. C. Keel, Rochester.....		1.00
White Pigeon, Wm. Somerville, Viola.....	2.00	
White Pigeon, R. C. Keel, Rochester.....		1.00
Zolatoreff, Wm. Somerville, Viola.....	2.00	
Zolatoreff, R. C. Keel, Rochester.....		1.00

*Seedling Apples.*

Collection, Geo. Miller, Richland.....	10.00	
Collection, Mrs. C. W. Gordon, Long Lake.....		5.00
Single variety, for all purposes, Geo. Miller, Richland....	5.00	
Single variety, for all purposes, Mrs. R. Palmer, Viola....		3.00
Long keeping shown at State Fair (premium to be awarded when exhibited, also at annual meeting of State Horticultural Society), not kept in cold storage, Geo. Miller, Richland.....	5.00	
Long keeping shown at State Fair (premium to be awarded when exhibited, also at annual meeting of State Horticultural Society), not kept in cold storage, Mrs. R. Palmer, Viola.....		3.00

## CLASS 70.—GRAPES.

*Sweepstakes.*

Collection, may or may not be grown by exhibitor, A. W. Latham, Excelsior.....	15.00	
Collection, may or may not be grown by exhibitor, Mrs. S. Irwin, Excelsior.....		10.00
Collection, may or may not be grown by exhibitor, F. G. Gould, Excelsior.....	Third	5.00
Collection, grown by exhibitor, A. W. Latham, Excelsior..	15.00	
Collection, grown by exhibitor, Mrs. Belle Barton, Excel- sior.....		10.00
Collection, grown by exhibitor, F. G. Gould, Excelsior..	Third	5.00

*Single Plates.*

Agawam, A. W. Latham, Excelsior.....	2.00	
Agawam, Mrs. Belle Barton, Excelsior.....		1.00
Brighton, H. L. Crane, Excelsior.....	2.00	
Brighton, A. W. Latham, Excelsior.....		1.00
Concord, A. W. Latham, Excelsior.....	2.00	
Concord, Mrs. S. Irwin, Excelsior.....		1.00
Delaware, Mrs. S. Irwin, Excelsior.....	2.00	
Delaware, A. W. Latham, Excelsior.....		1.00
Duchess, H. L. Crane, Excelsior.....	2.00	
Duchess, A. W. Latham, Excelsior.....		1.00
Early Victor, Mrs. Belle Barton, Excelsior.....	2.00	
Empire State, A. W. Latham, Excelsior.....	2.00	

	1st. prem.	2d. prem.
Empire State, Mrs. Belle Barton, Excelsior.....		\$1.00
Herbert (Rogers No. 44), A. W. Latham, Excelsior.....	\$2.00	
Iona, H. L. Crane, Excelsior.....	2.00	
Iona, A. W. Latham, Excelsior.....		1.00
Janesville, H. L. Crane, Excelsior.....	2.00	
Janesville, R. Knapheide, St. Paul.....		1.00
Lady, A. W. Latham, Excelsior.....	2.00	
Lady, R. Knapheide, St. Paul.....		1.00
Lindley, A. W. Latham, Excelsior.....	2.00	
Lindley, H. L. Crane, Excelsior.....		1.00
Massasoit, R. Knapheide, St. Paul.....	2.00	
Massasoit, A. W. Latham, Excelsior.....		1.00
Moore's Early, F. G. Gould, Excelsior.....	2.00	
Moore's Early, H. L. Crane, Excelsior.....		1.00
Niagara, Mrs. Belle Barton, Excelsior.....	2.00	
Pocklington, H. L. Crane, Excelsior.....	2.00	
Pocklington, Mrs. Belle Barton, Excelsior.....		1.00
Poughkeepsie Red, Mrs. Belle Barton, Excelsior.....	2.00	
Wilden, A. W. Latham, Excelsior.....	2.00	
Worden, A. W. Latham, Excelsior.....	2.00	
Worden, Mrs. Belle Barton, Excelsior.....		1.00

## CLASS 71.—MISCELLANEOUS FRUITS.

(All to be growth of 1892, to be shown in glass pint fruit jars and not in syrup.)

Blackberry, Ancient Britton, H. J. Ludlow, Worthington.....	2.00	
Blackberry, Ancient Britton, J. G. Bass, Hamline.....		1.00
Blackberry, Snyder, L. E. Day, Farmington.....	2.00	
Blackberry, Snyder, U. L. Parker, Farmington.....		1.00
Blackberry, Stone's Hardy, Mrs. Wm. Lyons, Minneapolis.....	2.00	
Blackberry, Stone's Hardy, U. L. Parker, Farmington....		1.00
Blackberry, Taylor's Prolific, L. E. Day, Farmington....	2.00	
Blackberry, Taylor's Prolific, Mrs. Wm. Lyons Minneapolis.....		1.00
Currants, collection, Mrs. Wm. Lyons, Minneapolis.....	3.00	
Raspberry, black, Mrs. Wm. Lyons, Minneapolis.....	2.00	
Raspberry, black, Mrs. N. J. Leavitt, Minneapolis.....		1.00
Raspberry, red, Mrs. Wm. Lyons, Minneapolis.....	2.00	
Raspberry, red, Mrs. N. J. Leavitt, Minneapolis.....		1.00
Strawberries, collection, not less than five varieties, Mrs. Wm. Lyons, Minneapolis.....	4.00	

## NATIVE PLUMS.

Collection, not less than five varieties, R. Knapheide, St. Paul.....	4.00	
DeSoto, Dewain Cook, Windom.....	2.00	
Forest Garden, Dewain Cook, Windom.....	2.00	
Rollingstone, Dewain Cook, Windom....	2.00	
Any variety, (best) Dewain Cook, Windom .....	2.00	
Any variety, (best) R. Knapheide, St. Paul.....		1.00

## CRANBERRIES.

(Competition open to the World.)

No entries.

## CLASS 72.—FLOWERS.

## Professional Growers.

(Competition open to the World.)

	1st prem.	2d prem.
Display greenhouse and hothouse plants, in pots, E. Nagel & Co., Minneapolis.....	\$25.00	
Display greenhouse and hothouse plants, in pots, Jno. Vasatka, Minneapolis.....		\$15.00
Display greenhouse and hothouse plants, in pots, M. Windmiller & Son, Mankato.....	Third,	10.00
Display foliage plants in pots, 10 or more varieties, E. Nagel & Co., Minneapolis.....	5.00	
Display foliage plants in pots, 10 or more varieties, Jno. Vasatka, Minneapolis.....		3.00
Display climbing vines, five varieties, Jno. Vasatka, Minneapolis.....	3.00	
Display climbing vines, five varieties, E. Nagel & Co., Minneapolis.....		2.00
Display hanging basket plants, five varieties, E. Nagel & Co., Minneapolis.....	3.00	
Display of Coleus, 6 or more colors, Jno. Vasatka, Minneapolis.....	3.00	
Coleus specimen, Jno. Vasatka, Minneapolis.....	2.00	
Cactus and succulent plants, collection, 10 or more varieties, Jno. Vasatka, Minneapolis.....	5.00	
Fuchsias, in bloom, 6, Jno. Vasatka, Minneapolis.....	5.00	
Fuchsia, in bloom, single, Jno. Vasatka, Mpls.....	2.00	
Fuchsia, in bloom, single, E. Nagel & Co., Mpls.....		1.00
Fuchsia, in bloom, double, Jno. Vasatka, Mpls.....	2.00	
Geraniums, in bloom, 25 varieties, Jno. Vasatka, Minneapolis.....	10.00	
Geraniums, in bloom, 25 varieties, E. Nagel & Co., Minneapolis.....		5.00
Geraniums, in bloom, single, Jno. Vasatka, Minneapolis..	2.00	
Geraniums, in bloom, single, E. Nagel & Co., Minneapolis		1.00
Geraniums, in bloom, double, Jno. Vasatka, Minneapolis.	2.00	
Geraniums, in bloom, double, E. Nagel & Co., Minneapolis		1.00
Geraniums, in bloom, 10 tri-colored and variegated, E. Nagel & Co., Minneapolis.....	5.00	
Geraniums, in bloom, 10 tri-colored and variegated, Jno. Vasatka, Minneapolis.....		3.00
Roses, in bloom, 6, in pots, E. Nagel, Minneapolis.....	4.00	
Rose, in bloom, single plant, Jno. Vasatka, Mpls.....	2.00	
Rose, in bloom, single plant, E. Nagel, Minneapolis.....		1.00
Specimen plant, single, any variety, E. Nagel & Co., Minneapolis.....	2.00	
Specimen plant, single, any variety, Vina Harden, Hamline.....		1.00

*Cut Flowers.*

Display, natural leaves and flowers, artistically arranged, E. Nagel & Co., Minneapolis.....	5.00	
Display, natural leaves and flowers, artistically arranged, F. G. Gould, Excelsior.....		3.00
Display, natural leaves and flowers, artistically arranged, Jno. Vasatka, Minneapolis.....	Third,	2.00
Cut flowers, basket, E. Nagel & Co., Minneapolis.....	5.00	
Cut flowers, basket, F. G. Gould, Excelsior.....		3.00
Funeral design, E. Nagel & Co., Minneapolis.....	5.00	
Funeral design, F. G. Gould, Excelsior.....		3.00
Bouquet, pyramid of roses, E. Nagel & Co., Minneapolis.	3.00	
Bouquet, pyramid of roses, F. G. Gould, Excelsior.....		2.00
Bouquet, hand, E. Nagel & Co., Minneapolis.....	3.00	



	1st prem.	2d prem.
Bouquet, hand, F. G. Gould, Excelsior.....		\$2.00
Asters, assorted colors, 12, Wm. Toole, Baraboo, Wis...	\$3.00	
Asters, assorted colors, 12, M. M. Frisselle, Excelsior...		2.00
Dahlias, assorted colors, 12, Mrs. Belle Barton, Excelsior.	3.00	
Gladioli, distinct colors, 12, Wm. Toole, Baraboo, Wis....	3.00	
Pansies, distinct colors, 25, Wm. Toole, Baraboo, Wis....	3.00	
Pansies, distinct colors, 25, J. G. Bass, Hamline.....		2.00
Petunias, double, 6 colors, Wm. Toole, Baraboo, Wis....	3.00	
Petunias, double, 6 colors, M. Windmiller & Son, Mankato		2.00
Pinks, carnation, 10 varieties, E. Nagel & Co., Minneapolis	3.00	
Pinks, carnation, 10 varieties, F. G. Gould, Excelsior....		2.00
Pinks, hedgewigii, 6 colors, M. Windmiller & Son, Mankato	3.00	
Pinks, hedgewigii, 6 colors, J. G. Bass, Hamline.....		2.00
Roses, distinct varieties, 25, E. Nagel & Co., Minneapolis.	5.00	
Roses, distinct varieties, 25, M. Windmiller & Son, Mankato		3.00
Tuberose, in bloom, 12 plants, E. Nagel & Co., Minneapolis	3.00	

### *Non-Professional Growers.*

(Competition open to the State only.)

Display of greenhouse plants, in pots, Mrs. Wm. Lyons, Minneapolis.....	10.00	
Coleus, display, Mrs. Wm. Lyons, Minneapolis. ....	2.00	
Cactus, collection, 5 varieties, Mrs. Wm. Lyons, Minneapolis	3.00	
Cactus, specimen, Mrs. Wm. Lyons, Minneapolis. ....	2.00	
Fuchsias, in bloom, single, Mrs. Wm. Lyons, Minneapolis.	2.00	
Fuchsia, in bloom, double, Mrs. Wm. Lyons, Minneapolis.	2.00	
Geraniums, in bloom, single, Mrs. Wm. Lyons, Minneapolis	2.00	
Geraniums, in bloom, double, Mrs. Wm. Lyons, Minneapolis	2.00	
Plants, foliage, five varieties, Mrs. A. S. Babcock, St. Anthony Park. ....	3.00	
Plants, foliage, 5 varieties, Mrs. Wm. Lyon, Minneapolis.		1.50
Plant, hanging basket, Mrs. W. Lyons, Minneapolis.....	2.00	
Vine, climbing, specimen, Mrs. A. S. Babcock, St. Anthony Park. ....	2.00	
Vine, climbing, specimen, Mrs. Wm. Lyons, Minneapolis.		1.00

### CUT FLOWERS.

Annals, tastefully arranged, collection. First Premium, a typewriter, valued at \$15.00, offered by Brown, Tracy & Co., blank book manufacturers and stationers, St. Paul, Minn..... Anna B. Kingsbury, Merriam Park.

1st prem. 2d. prem.

Annals, tastefully arranged, collection, Mrs. Frank Rogers, Minneapolis.....		\$3.00
Basket, tastefully arranged, Mrs. G. W. Sherman, Minneapolis.....	\$2.00	
Basket, tastefully arranged, J. G. Bass, Hamline.....		1.00
Bouquet, hand, Mrs. Frank Rogers, Minneapolis.....	2.00	
Bouquet, hand, J. G. Bass, Hamline.....		1.00
Bouquet, table, pair flat, J. G. Bass, Hamline.....	2.00	
Bouquet, table, pair flat, Mrs. Wm. Lyons, Minneapolis..		1.00
Bouquet, everlasting flowers, Mrs. Frank Rogers, Minneapolis.....	2.00	
Bouquet, ornamental grasses, Anna B. Kingsbury, Merriam Park .....	2.00	
Bouquet, ornamental grasses, Mrs. Wm. Lyons, Minneapolis .....		1.00
Leaves and flowers, floral design, artistically arranged, Mrs. N. J. Leavitt, Minneapolis .....	5.00	

*Amateurs Under Sixteen Years, Boys or Girls.*

	1st prem.	2d prem.
Annuals, Hugh F. Wilcox, Northfield .....	\$5.00	
Pansies, tastefully arranged, display, Hugh F. Wilcox, Northfield .....	4.00	
Pansies, tastefully arranged, display, Mrs. M. L. Allyn, Red Wing .....		\$2.00
Total .....		\$777.00

## DIVISION K.—VEGETABLES AND CULINARY.

Premiums awarded, \$520.00.

J. H. STEVENS, Minneapolis, Superintendent.

D. T. STIMSON,	} Judges.
WILLIAM LYONS,	
TIM McCUE,	

## CLASS 73.—VEGETABLES.

*Sweepstakes.*

Display of culinary and stock vegetables and other agricultural and horticultural products, by any county or local agricultural or horticultural society (outside of Hennepin and Ramsey counties), no portion of display to be entered for individual premiums.

Goodhue County Farmers' Club, Red Wing .....	200.00	
Anoka county, Anoka .....		100.00
Stevens county, Morris .....	Third,	50.00
Exhibit by professional gardeners, consisting of not less than seventy-five varieties, of each not less than three specimens, all to be grown by the exhibitor.		
August Wittmann, St. Paul .....	30.00	

## CLASS 74.—POTATOES, ETC.

## By Professional Growers.

Early potatoes, not less than three varieties, one peck each, Chas. Gantzer, St. Paul .....	5.00	
Early potatoes, not less than three varieties, one peck each, August Whittmann, St. Paul .....		2.00
Late keeping potatoes, not less than three varieties, one peck each, August Whittmann, St. Paul .....	5.00	
Largest and handsomest half bushel potatoes, August Whittmann, St. Paul .....	3.00	
Three largest, any variety, August Whittman, St. Paul ..	2.00	
Long blood beet, for table, 12, August Whittmann, St. Paul .....	2.00	
Long red mangels, 12, Chas. Gantzer, St. Paul .....	2.00	
Long red mangels, 12, August Whittmann, St. Paul .....		1.00
Turnip rooted beet, 12, August Whittmann, St. Paul .....	2.00	
Turnip rooted beet, 12, Chas. Gantzer, St. Paul .....		1.00
Yellow globe mangels, 12, Chas. Gantzer, St. Paul .....	2.00	
Yellow globe mangels, 12, August Whittmann, St. Paul ..		1.00

*Miscellaneous.*

Beans, Lima, in pod, half peck, August Whittmann, St. Paul ..	2.00	
Beans, string wax, half peck, August Whittmann, St. Paul ..	2.00	
Beans, string wax, half peck, Chas. Gantzer, St. Paul ....		1.00

1st prem. 2d prem.

Cabbage, flat Dutch, 6, August Whittmann, St. Paul.....	\$2.00	
Cabbage, flat Dutch, 6, Chas. Gantzer, St. Paul.....		\$1.00
Cabbage, drumhead, 6, Chas. Gantzer, St. Paul.....	2.00	
Cabbage, drumhead, 6, August Whittmann, St. Paul.....		1.00
Cabbage, Winningstadt, 6, August Whittmann, St. Paul.....	2.00	
Cauliflower, 3, August Whittmann, St. Paul.....	2.00	
Celery, 6 heads, Chas. Gantzer, St. Paul.....	2.00	
Corn, evergreen sweet, 12 ears, August Whittman, St. Paul.....	2.00	
Corn, early Cory sweet, 12 ears, August Whittmann, St. Paul.....	2.00	
Cucumbers, 6, Chas. Gantzer, St. Paul.....	2.00	
Cucumbers, 6, August Whittmann, St. Paul.....		1 00
Cucumbers, pickling, half peck, August Whittmann, St. Paul.....	2.00	
Cucumbers, pickling, half peck, Chas. Gantzer, St. Paul.....		1.00
Carrots, long orange, 10, Chas. Gantzer, St. Paul.....	2.00	
Carrots, Danver's yellow, 12, table, August Whittmann, St. Paul.....	2.00	
Carrots, Danver's yellow, 12, table, Chas. Gantzer, St. Paul.....		1.00
Carrots, early shorthorn, 12, table, August Whittman, St. Paul.....	2.00	
Carrots, early, shorthorn, 12 table, Chas. Gantzer, St. Paul.....		1.00
Egg Plant, 6, August Whittmann St. Paul.....	2.00	
Egg Plant, 6, Chas. Gantzer, St. Paul.....		1.00
Endive, 6 heads, August Whittmann, St. Paul.....	2.00	
Endive, 6 heads, Chas. Gantzer, St. Paul.....		1.00
Kohl-rabi, 6 heads, August Whittmann, St. Paul.....	2.00	
Lettuce, 6 heads, Chas. Gantzer, St. Paul.....	2.00	
Lettuce, 6 heads, August Whittmann, St. Paul.....		1.00
Melons, water, 3, August Whittmann, St. Paul.....	2.00	
Melons, musk, 3, August Whittmann, St. Paul.....	2.00	
Melons, citron, 3, (preserving) August Whittmann, St. Paul.....	2.00	
Okra, half peck, August Whittmann, St. Paul.....	2.00	
Onions, red, peck, Chas. Gantzer, St. Paul.....	2.00	
Onions, red, peck, August Whittmann, St. Paul.....		1.00
Onions, yellow globe, peck, Chas. Gantzer, St. Paul.....	2.00	
Onions, yellow globe, peck, August Whittmann, St. Paul.....		1.00
Onions, white globe, peck, Chas. Gantzer, St. Paul.....	2.00	
Onions, white globe, peck, August Whittmann, St. Paul.....		1.00
Onions, white pickling, half peck, August Whittmann, St. Paul.....	2.00	
Onions, white pickling, half peck, Chas. Gantzer, St. Paul.....		1.00
Parsnips, hollow crown or sugar, 9, Chas Gantzer, St. Paul.....	2.00	
Parsnips, hollow crown or sugar, nine, August Whittmann, St. Paul.....		1.00
Peppers, twelve, large bell, August Whittmann, St. Paul.....	2.00	
Peppers, twelve, large bell, Chas. Gantzer, St. Paul.....		1.00
Pumpkins, large field, three, Chas. Gantzer, St. Paul.....	2.00	
Pumpkins, large field, three, August Whittman, St. Paul.....		1.00
Pumpkins, pie, (cheese), three, Chas. Gantzer, St. Paul.....	2.00	
Pumpkins, pie, (cheese), three, August Whittman, St. Paul.....		1.00
Rhubarb, six stalks, August Whittman, St. Paul.....	2.00	
Rhubarb, six stalks, Chas. Gantzer, St. Paul.....		1.00
Salsify or vegetable oyster, twelve, Chas. Gantzer, St. Paul.....	2.00	
Squash, Boston Marrow, three, (quality to rule,) Chas. Gantzer, St. Paul.....	2.00	
Squash, Butman, three, (quality to rule), August Whittmann, St. Paul.....	2.00	
Squash, Hubbard, three, (quality to rule), August Whittmann, St. Paul.....	2.00	
Squash, Hubbard, three, (quality to rule), Chas. Gantzer, St. Paul.....		1.00



	1st prem.	2d prem.
Squash, Turban, three, (quality to rule), Chas. Gantzer, St. Paul.....	2.00	
Squash, Turban, three, (quality to rule), August Whittmann, St. Paul.....		1.00
Squash, Marblehead, three, (quality to rule), August Whittmann, St. Paul.....	2.00	
Tomatoes, for all purposes, half peck, August Whittmann, St. Paul.....	2.00	
Tomatoes, for all purposes, half peck, Chas. Gantzer, St. Paul.....		1.00
Turnips, rutabaga, six, Chas. Gantzer, St. Paul.....	2.00	
Pot herbs, collection, August Whittman, St. Paul.....	2.00	
Pot herbs, collection, Chas. Gantzer, St. Paul.....		1.00
Special, offered by L. L. May & Co., St. Paul, Minn., for collection of vegetables raised in Minnesota by one exhibitor, and from seed purchased from L. L. May & Co., .....\$5.00 in gold.		

No entries.

#### CLASS 75.—VEGETABLES.

*Grown and Exhibited by Farmers..*

(Market Gardeners excluded.)

Beets, long blood, 6, J. G. Bass, Hamline.....	2.00	
Beets, turnip rooted, 6, J. G. Bass, Hamline.....	2.00	
Beans, wax string, half peck, L. Hoyt, St. Paul.....	2.00	
Beans, pole, half peck, O. A. Smith, Clearwater.....	2.00	
Carrots, orange, 6, O. A. Smith, Clearwater.....	2.00	
Carrots, early shorthorns, 6, O. A. Smith, Clearwater....	2.00	
Cabbage, flat Dutch, 6, J. G. Bass, Hamline.....	2.00	
Corn, sweet, evergreen, 12 ears, Lorenzo Hoyt, St. Paul...	2.00	
Cucumbers, 3, J. G. Bass, Hamline.....	2.00	
Cucumbers, 3, Lorenzo Hoyt, St. Paul.....		1.00
Cucumbers, pickling, half peck, J. G. Bass, Hamline....	2.00	
Endive, 6 heads, O. A. Smith, Clearwater.....	2.00	
Melons, citron (preserving), 3, O. A. Smith, Clearwater....	2.00	
Okra, half peck, O. A. Smith, Clearwater.....	2.00	
Onions, red, peck, J. G. Bass, Hamline.....	2.00	
Onions, yellow, peck, J. G. Bass, Hamline.....	2.00	
Onions, white, peck, J. G. Bass, Hamline.....	2.00	
Onions, white, pickling, peck, J. G. Bass, Hamline.....	2.00	
Potatoes, collection, adapted to general cultivation, peck each, J. G. Bass, Hamline.....	3.00	
Potatoes, collection, adapted to general cultivation, peck each, W. M. Ferguson, Linwood Park.....		2.00
Potatoes, early, peck, R. C. Dunn, Princeton.....	2.00	
Potatoes, early, peck, W. S. Best, Rosetown.....		1.00
Potatoes, late-keeping, peck, W. S. Best, Rosetown.....	2.00	
Potatoes, late-keeping, peck, J. G. Bass, Hamline.....		1.00
Potatoes, largest and handsomest, half bushel, J. G. Bass, Hamline.....	2.00	
Parsnips, hollow crown or sugar, 6, O. A. Smith, Clearwater.....	2.00	
Rhubarb, 6 stalks, J. G. Bass, Hamline.....	2.00	
Salsify or vegetable oyster, 6, O. A. Smith, Clearwater....	2.00	
Turnips, rutabaga, 6 yellow, J. G. Bass, Hamline.....	2.00	
Turnips, English, white flat, 6, O. A. Smith, Clearwater..	2.00	
Turnips, English, white flat, 6, L. Hoyt, St. Paul.....		1.00

## CLASS 76.—FLOUR, MEAL, SEEDS, ETC.

	1st prem.	2d prem.
Barley, bright, bushel, Francis Dick, Afton.....	\$3.00	
Barley, bright, Francis Dick, Afton, World's Fair premium.....	6.00	
Beans, white, peck, Francis Dick, Afton .....	2.00	
Beans, white, peck, Francis Dick, Afton, World's Fair premium .....	4.00	
Buckwheat, bushel, O. A. Smith, Clearwater.....	2.00	
Buckwheat, bushel, O. A. Smith, Clearwater, World's Fair premium .....	4.00	
Buckwheat, bushel, R. Knapheide, St. Paul.....		\$1.00
Buckwheat, bushel, R. Knapheide, St. Paul, Word's Fair premium .....		2.00
Corn, broom, seed straw, thirty stalks, O. A. Smith, Clearwater .....	3.00	
Corn, broom, seed straw, thirty stalks, O. A. Smith, Clearwater, World's Fair premium.....	6.00	
Corn, yellow dent, fifty ears, R. Knapheide, St. Paul.....	3.00	
Corn, yellow dent, fifty ears, R. Knapheide, St. Paul, World's Fair premium .....	6.00	
Corn, yellow dent, fifty ears, J. G. Bass, Hamline.....		2.00
Corn, yellow dent, fifty ears, J. G. Bass, Hamline, World's Fair premium .....		4.00
Corn, yellow flint, fifty ears, Francis Dick, Afton.....	3.00	
Corn, yellow flint, fifty ears, Francis Dick, Afton, World's Fair premium .....	6.00	
Corn, pop, fifty ears, O. A. Smith, Clearwater .....	2.00	
Corn, pop, fifty ears, O. A. Smith, Clearwater, World's Fair premium.....	4.00	
Flour made from Minnesota spring wheat, barrel, King-land, Smith & Co., St. Paul.....	Diploma.	
Oats, white, bushel, R. Knapheide, St. Paul.....	3.00	
Oats, white, bushel, R. Knapheide, St. Paul, World's Fair premium.....	6.00	
Oats, white, bushel, Francis Dick, Afton .....		2.00
Oats, white, bushel, Francis Dick, Afton, World's Fair premium.....		4.00
Peas, field, peck, O. A. Smith, Clearwater.....	3.00	
Peas, field, peck, O. A. Smith, Clearwater, World's Fair premium .....	6.00	
Rye, bushel, Francis Dick, Afton.....	3.00	
Rye, bushel, Francis Dick, Afton, World's Fair premium.....	6.00	
Rye, bushel, O. A. Smith, Clearwater.....		2.00
Rye, bushel, O. A. Smith, Clearwater, World's Fair premium .....		4.00
Seed, flax, peck, O. A. Smith, Clearwater .....	5.00	3.00
Seed, flax, peck, O. A. Smith, Clearwater, World's Fair premium .....	10.00	6.00
Wheat, fife, bushel, Francis Dick, Afton.....	5.00	
Wheat, fife, bushel, Francis Dick, Afton, World's Fair premium .....	10.00	
Wheat, spring, bushel, R. Knapheide, St. Paul .....	5.00	
Wheat, spring, bushel, R. Knapheide, St. Paul, World's Fair premium .....	10.00	
Wheat, spring, bushel, Francis Dick, Afton.....		3.00
Wheat, spring, bushel, Francis Dick, Afton, World's Fair premium .....		6.00
Wheat, winter, bushel, Francis Dick, Afton.....	5.00	3.00
Wheat, winter, bushel, Francis Dick, Afton, World's Fair premium .....	10.00	6.00
Total.....		\$520.00

## DIVISION L.—SUGAR, SYRUP AND DOMESTIC STORES.

Premiums awarded, \$195.00.

J. H. STEVENS, Minneapolis, Superintendent.

D. T. STIMSON,	} Judges of Classes 77 and 78.
A. H. GREEN,	
L. G. ALDRICK,	
D. T. STIMSON,	} Judges of Class 79.
MRS. G. W. SHUMAN,	
MRS. J. W. STONE,	

## CLASS 77.—SUGAR AND SYRUP.

	1st prem.	2d prem
Exhibit amber cane sugar, to consist of fifty pounds or more of sugar manufactured from amber cane, with mode of manufacture, Seth H. Kenny, Morristown.....	\$10.00	
Exhibit of amber cane syrup, to consist of five gallons or more of syrup manufactured from amber cane, with mode of manufacture, Seth H. Kenny, Morristown.....	10.00	
Exhibit maple syrup, consisting of one gallon or more of maple syrup, with mode of manufacture, Mrs. B. Barton, Excelsior.....	5.00	

## CLASS 78.—BREAD AND CAKE (DOMESTIC) WITH FORMULA.

NOTE.—In this and the following class exhibitors are required to file with the secretary, at the time of making the entry, a written recipe or formula for making the article exhibited. If not done, the exhibit will be debarred from receiving a premium.

	1st prem.	2d prem.
Bread, Boston brown, loaf, Mrs. G. E. Cooper, St. Paul...	\$2.00	
Bread, Boston brown, loaf, Mrs. Wm. Lyons, Minneapolis.		\$1.00
Bread, graham, loaf, Mrs. G. J. Thiebald, St. Paul. ....	2.00	
Bread, graham, loaf, Mrs. Wm. Lyons, Minneapolis :....		1.00
Bread, white, loaf, Mrs. J. F. Stewart, St. Anthony Park.	2.00	
Bread, white, loaf, Anna B. Kingsbury, Merriam Park. . .		1.00
Bread, corn, Mrs. W. C. Watrous, St. Anthony Park.....	2.00	
Bread, corn, Mrs. M. L. Gantzer, St. Paul.....		1.00
Bread, rye, Mrs. N. J. Leavitt, Minneapolis.....	2.00	
Bread, rye, Mrs. G. J. Thiebaud, St. Paul ....		1.00
Cake, citron, Mrs. Wm. Jones, Merriam Park.....	2.00	
Cake, citron, Mrs. A. E. Balser, St. Anthony Park.....		1.00
Cake, chocolate, Mrs. H. M. Butts, Hamline.....	2.00	
Cake, chocolate, Mrs. D. F. Polk, St. Anthony Park.....		1.00
Cake, chocolate, caramel, Mrs. H. M. Butts, Hamline ....	2.00	
Cake, chocolate, caramel, Mrs. G. J. Thiebaud, St. Paul..		1.00
Cake, angel, Mrs. G. J. Thiebaud, St. Paul.....	2.00	
Cake, angel, Mrs. W. C. Watrous, St. Anthony Park.....		1.00
Cake, almond, Mrs. Wm. Jones, Merriam Park.....	2.00	
Cake, almond, Mrs. H. M. Butts, Hamline.....		1.00
Cake, delicate, Mrs. Wm. Jones, Merriam Park.....	2.00	
Cake, delicate, Mrs. A. E. Balser, St. Anthony Park.....		1.00
Cake, fruit, Mrs. G. J. Thiebaud, St. Paul.....	2.00	
Cake, gold, Mrs. H. M. Butts, Hamline.....	2.00	
Cake, gold, Mrs. G. J. Thiebaud, St. Paul.....		1.00
Cake, sponge, Mrs. G. J. Thiebaud, St. Paul.....	2.00	
Cake, sponge, Mrs. D. F. Polk, St. Anthony Park.....		1.00
Cookies, white, Mrs. Wm. Jones, Merriam Park.....	2.00	
Cookies, white, Mrs. G. J. Thiebaud, St. Paul.....		1.00
Cookies, molasses, Mrs. G. J. Thiebaud, St. Paul.....	2.00	
Cookies, molasses, Mrs. D. H. Teas, Hamline.....		1.00
Graham gems, Miss Ida Cannon, St. Anthony Park.....	2.00	
Graham gems, Mrs. W. S. Newton, Pine Island... ..		1.00
Rolls, breakfast, 12, Mrs. G. J. Thiebaud, St. Paul ....	2.00	
Rolls, breakfast, 12, Anna B. Kingsbury, Merriam Park..		1.00
Rolls, French, 12, Mrs. D. F. Polk, St. Anthony Park.....	2.00	
Rolls, French, 12, Mrs. N. J. Leavitt, Minneapolis .....		1.00



*Special.*

Pillsbury-Washburn Flour Mill Co., of Minneapolis, offer \$5.00 for the best display of bread, biscuit, etc., made from "Pillsbury's Best" flour; also \$5.00 for the best loaf of bread made by a girl under twelve years of age, from "Pillsbury's Best" flour: First premium, Mrs. J. F. Stewart, St. Anthony Park; second premium, no award.

## CLASS 79.—DOMESTIC CANNED GOODS, JELLIES, ETC.

	1st prem.	2d prem.
Canned blackberries, Edna Berden, Hamline.....	\$2.00	
Canned blackberries, Mrs. M. L. Gantzer, St. Paul .....		\$1.00
Canned blueberries, Mrs. D. F. Polk, St. Anthony Park..	2.00	
Canned blueberries, Mrs. William Lyons, Minneapolis....		1.00
Canned cherries, Mrs. H. L. Tankersley, St. Paul.....	2.00	
Canned cherries, Mrs. A. S. Babcock, St. Anthony Park ..		1.00
Canned crab apple, Mrs. William Lyons, Minneapolis ....	2.00	
Canned crab apple, Mrs. G. Allyn, Red Wing.....		1.00
Canned currants, red, Mrs. William Lyons, Minneapolis..	2.00	
Canned currants, red, Mrs. L. Huntington, St. Paul.....		1.00
Canned gooseberries, Mrs. William Lyons, Minneapolis...	2.00	
Canned gooseberries, Mrs. M. Britts, St. Paul .....		1.00
Canned grapes, Mrs. M. L. Gantzer, St. Paul.....	2.00	
Canned grapes, Mrs. Wm. Lyons, Minneapolis .....		1.00
Canned ground cherries, Mrs. G. Allyn, Red Wing.....	2.00	
Canned plums, Anna B. Kingsbury, Merriam Park.....	2.00	
Canned plums, Mrs. Wm. Lyons, Minneapolis.....		1.00
Canned raspberries, Mrs. N. J. Leavitt, Minneapolis.....	2.00	
Canned raspberries, Mrs. G. Allyn, Red Wing.....		1.00
Canned strawberries, Mrs. L. Tuttle, St. Paul.....	2.00	
Canned strawberries, Mrs. N. J. Leavitt, Minneapolis....		1.00
Canned tomatoes, red, Mrs. M. P. Estes, Hamline.....	2.00	
Canned tomatoes, red, Mrs. G. Allyn, Red Wing.....		1.00
Canned tomatoes, yellow, Mrs. M. Britts, St. Paul.....	2.00	
Canned tomatoes, yellow, Mrs. M. L. Gantzer, St. Paul...		1.00
Jam, blackberry, Edna Berden, Hamline.....	2.00	
Jam, blackberry, Anna B. Kingsbury, Merriam Park....		1.00
Jam, currant, Mrs. H. L. Tankersley, St. Paul.....	2.00	
Jam, currant, Mrs. M. T. Flegle, Minneapolis .....		1.00
Jam, gooseberry, Mrs. Wm. Lyons, Minneapolis.....	2.00	
Jam, gooseberry, Mrs. S. M. Sterret, Lake City.....		1.00
Jam, raspberry, Anna B. Kingsbury, Merriam Park.....	2.00	
Jam, raspberry, Mrs. H. L. Tankersley, St. Paul .....		1.00
Jam, strawberry, Mrs. D. F. Polk, St. Anthony Park....	2.00	
Jam, strawberry, Mrs. H. L. Tankersley, St. Paul. ....		1.00
Jelly, crab apple, $\frac{1}{2}$ pint glass, Mrs. Belle Barton, Excelsior.....	2.00	
Jelly, crab apple, $\frac{1}{2}$ pint glass, Mrs. H. L. Tankersley, St. Paul .....		1.00
Jelly, blackberry, $\frac{1}{2}$ pint glass, Mrs. M. L. Gantzer, St. Paul .....	2.00	
Jelly, blackberry, $\frac{1}{2}$ pint glass, Mrs. M. T. Flegle, Minneapolis.....		1.00
Jelly, currant, black, $\frac{1}{2}$ pint glass, Mrs. William Teas, St. Paul.....	2.00	
Jelly, currant, black, $\frac{1}{2}$ pint glass, Mrs. Belle Barton, Excelsior.....		1.00
Jelly, grape, red, $\frac{1}{2}$ pint glass, Mrs. William Teas, St. Paul.....	2.00	
Jelly, grape, red, $\frac{1}{2}$ pint glass, Mrs. M. L. Gantzer, St. Paul .....		1.00
Jelly, gooseberry, $\frac{1}{2}$ pint glass, Mrs. M. Britts, St. Paul ...	2.00	
Jelly, gooseberry, $\frac{1}{2}$ pint glass, Mrs. M. L. Gantzer, St. Paul .....		1.00

	1st prem.	2d prem.
Jelly, plum, $\frac{1}{2}$ pint glass, Mrs. M. T. Flegle, Minneapolis.	\$2.00	
Jelly, plum, $\frac{1}{2}$ pint glass, Mrs. Belle Barton, Excelsior ..		\$1.00
Jelly, raspberry, $\frac{1}{2}$ pint glass, Mrs. M. L. Gantzer, St. Paul	2.00	
Jelly, raspberry, $\frac{1}{2}$ pint glass, Mrs. W. S. Newton, Pine Island.....		1.00
<i>Pickles, etc.</i>		
Chowchow, 1 quart, Mrs. M. L. Gantzer, St. Paul .....	2.00	
Catsup, tomato, 1 quart, Anna B. Kingsbury, Merriam Pk	2.00	
Catsup, tomato, 1 quart, Mrs. H. L. Tankersley, St. Paul.		1.00
Pickles, beet, 1 quart, Mrs. E. A. Carter, St. Anthony Park	2 00	
Pickles, beet, 1 quart, Mrs. H. M. Butts, Hamline.....		1.00
Pickles, cauliflower, 1 quart, Mrs. M. Britts, St. Paul.....	2.00	
Pickles, cucumber, 1 quart, Miss M. Ives, St. Paul .....	2.00	
Pickles, cucumber, 1 quart, Anna B. Kingsbury, Merriam Park.....		1.00
Pickles, crab apple, sweet, 1 quart, Miss Belle Barton, Excelsior.....	2.00	
Pickles, crab apple, sweet, 1 quart, Mrs. W. S. Newton, Pine Island.....		1.00
Pickles, mixed, 1 quart, Mrs. W. S. Newton, Pine Island.	2.00	
Pickles, mixed, 1 quart, Anna B. Kingsbury, Merriam Park.....		1.00
Pickles, onion, 1 quart, Vina Harden, Hamline.....	2.00	
Pickles, onion, 1 quart, Mrs. M. Britts, St. Paul.....		1.00
Pickles, peaches, sweet, 1 quart, Mrs. Wm. Lyons, Minneapolis.....	2.00	
Pickles, peaches, sweet, 1 quart, Anna B. Kingsbury, Merriam Park .....		1.00
Pickles, tomato, 1 quart, Mrs. Wm. Lyons, Minneapolis..	2.00	
Pickles, tomato, 1 quart, Mrs. E. A. Carter, St. Anthony Park.....		1.00
Pickles, watermelon, sweet, 1 quart, Mrs. S. A. Hartsten, St. Paul.....	2.00	
Pickles, watermelon, sweet, 1 quart, Mrs. M. T. Flegle, Minneapolis.....		1.00
Piccalilli, 1 quart, Mrs. D. F. Polk, St. Anthony Park....	2.00	
Piccalilli, 1 quart, Mrs. Wm. Lyons, Minneapolis.....		1.00
Spiced currants, 1 quart, Mrs. M. Britts, St. Paul .....	2.00	
Spiced currants, 1 quart, Mrs. H. M. Butts, Hamline.....		1.00
Spiced plums, 1 quart, Anna B. Kingsbury, Merriam Park	2.00	
Spiced plums, 1 quart, Mrs. G. Allyn, Red Wing.....		1.00
<i>Sweepstakes.</i>		
Display of bread, cakes, jellies, jams and pickles, by young lady under 18 years of age, Miss Elsie Williams, St. Paul.....	10.00	
Miss M. L. Allyn, Red Wing.....		5.00
Total .....		\$195.00

## RECAPITULATION.

## PREMIUMS AWARDED.

Division A—Horses.....	\$2,585.00
Division B—Cattle.....	4,590.00
Division C—Sheep.....	936.00
Division D—Swine.....	845.00
Division E—Poultry.....	396.00
Division F—Dairy Products.....	436.20
Division G—Honey, &c.....	277.00
Division H—Household Fabrics.....	432.50
Division J—Fruits and Flowers.....	777 00
Division K—Vegetables.....	520.00
Division L—Domestic Stores.....	195.00

## REPORT OF RACES.

STAKES.	Entered by.	Name of horse.	Entrance fee.	Amount of stakes	Check in settlement.
1 year old trot .....	MINNESOTA BREEDERS--				
	H. H. Budget.....	Holly B.....	\$25.00	\$235.00	\$58.75
	W. F. Holmes.....	Coteau.....	25.00		58.75
	W. J. Underwood.....	Cement.....	25.00		Drawn
	A. Taintor.....	Lady Nutwood.....	25.00		58.75
	J. C. Easton.....	Bub.....	25.00		Drawn
	Langdon & Douglass..	Frontier.....	25.00		58.75
	J. C. Seeley.....	.....	15.00		
	H. W. Phelps.....	.....	5.00		
	A. C. Bruce.....	.....	15.00		
	Added money by soc'y.	.....	50.00		
			235.00		
2 years old trot .....	W. F. Holmes.....	Kazon Cossac.	50.00	605.00	
	R. M. Dodds.....	Deac'n Halfhill	50.00		30.25
	J. Esbjomson.....	Balder.....	50.00		30.25
	G. W. Sherwood.....	Mankato.....	50.00		121.00
	A. Taintor.....	Marco Polo.....	50.00		121.00
	B. J. Sawyer.....	Winona.....	50.00		302.00
			300.00		
3 years old trot .....	W. K. Walker.....	K. Phallamont	50.00	645.00	71.65
	G. C. Cole.....	Maud Wright..	50.00		71.65
	R. M. Dodds.....	Ed. Weaver.....	50.00		71.65
	Brookdale Stock Farm.	Abdallah See..	50.00		71.65
	L. J. Phelps.....	Romey.....	50.00		71.65
	G. W. Sherwood.....	Maud D.....	50.00		71.65
	C. S. Mitchell.....	Maud M.....	50.00		71.65
	A. Taintor.....	Delphia D.....	50.00		71.65
	J. C. Easton.....	Maestro.....	50.00		71.65
	W. J. Underwood.....	Agate.....	50.00		
	B. J. Sawyer.....	.....	25.00		
	E. D. Washburn.....	.....	10.00		
	C. A. Comforth.....	.....	10.00		
	Added by society.....	.....	100.00		
			645.00		
4 years old trot .....	B. J. Sawyer.....	Hampton Maid	50.00	600.00	90.00
	Merriam & Long.....	La Russell.....	50.00		300.00
	F. A. Schultz.....	Marie Wilkes..	50.00		150.00
	C. M. Liebrock.....	.....	10.00		
	Wm. Dunn.....	.....	25.00		
	B. F. La Rue.....	.....	25.00		
	H. W. Phelps.....	.....	10.00		
	H. R. Hymes.....	.....	25.00		
	A. C. Bruce.....	.....	25.00		
	A. Taintor.....	.....	25.00		
	J. C. Easton.....	.....	25.00		
	Added by society.....	.....	220.00		
			540.00		
3 years old pace... ..	Brookdale Stock Farm.	Nestor.....	50.00	525.00	Drawn
	G. W. Sherwood.....	La Belle.....	50.00		131.25
	A. Taintor.....	Vera Capel....	50.00		262.50
	J. C. Easton.....	Thistle Dew....	50.00		Drawn
	R. T. Kingman.....	Valley.....	50.00		78.75
	W. F. Holmes.....	.....	25.00		Drawn
	Added money by soc'y.	.....	197.50		
			472.50		
2:30 pace .....	Langdon & Douglass..	Kitty R.....	40.00	400.00	200.00
	Midway Park stables..	Mac H.....	40.00		60.00
	S. B. Bartram.....	Kenoma.....	40.00		
	Abe Roback.....	Mugwump.....	40.00		
	W. E. Lackerby.....	Brown Neil....	40.00		
	L. H. Hoskins.....	Marion.....	40.00		
	G. W. Spear.....	Tartar Chief..	40.00		40.00
	G. C. Loomis.....	Albert L.....	40.00		100.00
	L. Keefe.....	S. G. A.....	40.00		



## REPORT OF RACES.—Continued.

PURSES.	Entered by.	Name of horse	Entrance fee.	Am't of stakes.	Check in settlm't.
2:25 trot .....	MINNESOTA BREEDERS—				
	Kidd & Edmund .....	Dick French ..	40.00	400.00	40.00
	V. L. Shuber .....	Mark Serious ..	40.00	.....	200.00
	J. D. Martin .....	Maggie Sh'rm'n ..	40.00	.....	100.00
	O. J. Evans .....	Mich'n Prince ..	40.00	.....	60.00
	G. G. Matthews .....	Bell W. ....	40.00	.....	.....
	Sam Hewey .....	King Princeps ..	40.00	.....	.....
	J. F. Hawkins .....	Captain Lee .....	40.00	.....	.....
	G. P. Smith .....	Alaska .....	40.00	.....	.....
2:21 trot .....	G. C. Raymond .....	Phoebe Wilkes ..	50.00	500.00	250.00
	F. H. Colby .....	Jerry L. ....	25.00	.....	.....
	H. W. Phelps .....	Mayhill .....	50.00	.....	50.00
	Geo. W. Spear .....	Greenleaf .....	50.00	.....	75.00
	Budd Doble .....	Reina .....	50.00	.....	125.00
2:30 trot .....	V. L. Shuler .....	Robin .....	40.00	400.00	60.00
	Midway Park stables ..	Warren Park ..	40.00	.....	.....
	T. J. Dunbar .....	Legal Test .....	40.00	.....	Dr'wn
	R. T. Kingman .....	Buckshot .....	40.00	.....	100.00
	H. H. Budgett .....	Alkalie .....	40.00	.....	.....
	H. M. Carkey .....	Alta .....	40.00	.....	.....
	G. D. Cole .....	Kit .....	40.00	.....	40.00
	J. Easton .....	Silverwood .....	40.00	.....	200.00
	G. G. Matthews .....	Billie W. ....	Settl'd	.....	.....
	E. A. Kimberley .....	Bezant No. 6321 ..	40.00	.....	.....
	J. C. Kathan .....	Max O'Rell .....	Susp'd	.....	.....
2:37 trot .....	Jno. T. Cable .....	Lady Ensign .....	40.00	400.00	.....
	G. W. Spear .....	Senator L. ....	40.00	.....	.....
	L. J. Phelps .....	Jay .....	40.00	.....	.....
	J. K. Wheat .....	Billie Gains .....	40.00	.....	60.00
	Gleneris Stock Farm ..	Dell .....	40.00	.....	200.00
	E. E. Cole .....	Bronco .....	40.00	.....	100.00
	J. D. Martin .....	Gold Finish .....	40.00	.....	.....
	A. H. Orth .....	Lullaby .....	Susp'd	.....	.....
	P. W. Webster .....	Westward .....	40.00	.....	.....
	C. P. Gove .....	Alby Gains .....	40.00	.....	.....
	J. F. Hawkins .....	Biddy Born .....	40.00	.....	40.00
	J. C. Ratham .....	Mollie B. ....	Susp'd	.....	.....
	G. G. Matthews .....	Nellie M. ....	40.00	.....	.....
2:45 trot .....	J. W. Day .....	Baywood .....	40.00	400.00	.....
	C. P. Gove .....	Belle Le Croix ..	40.00	.....	.....
	R. T. Kingman .....	Mon Dixon .....	40.00	.....	.....
	A. Carlson .....	King Grover .....	40.00	.....	200.00
	C. D. Andrews .....	Harrold K. ....	40.00	.....	.....
	L. M. Redmond .....	El Banecia .....	40.00	.....	.....
	L. Jacobson .....	Lousia B. ....	40.00	.....	.....
	A. C. Bruce .....	Guy H. ....	40.00	.....	100.00
	J. C. Kathan .....	Maud .....	Susp'd	.....	.....
	L. H. Hoskins .....	Nina Dinsmore ..	Susp'd	.....	.....
	T. J. Dunbar .....	Minnie A. ....	40.00	.....	60.00
	J. F. Hawkins .....	Belle Rouse .....	40.00	.....	40.00

## ENCOURAGEMENT TO THE BEET SUGAR INDUSTRY.

[From Bulletin No. 14. January, 1891.]

## MINNESOTA AGRICULTURAL EXPERIMENT STATION.

D. N. HARPER AND W. M. HAYS\*

RESULTS OF 1890.

Following is a tabulated statement of the results of analysis of sugar beets raised during 1890:

Lab. No.	VARIETY.	Solids.	Sugar.	Purity.
	ON THE FARM—	Per ct.	Per ct.	Per ct.
1441	Fl. Desprez Richest.....	17.24	13.42	77.84
1444	Improved Imperial.....	14.48	11.45	79.07
1445	Excelsior.....	15.55	12.26	78.84
1450	Dippe's Kleinwanzleben.....	15.92	13.04	81.91
1451	Vilmorin White Improved.....	13.72	10.96	79.86
1458	Lane's Improved.....	15.86	11.15	73.45
1472	Gregory's White Sugar.....	15.90	12.55	78.93
1473	Vilmorin.....	15.95	12.42	77.87
1474	Vilmorin White Improved.....	15.00	12.17	81.13
1476	Simon Legrand's White Improved.....	17.60	14.83	84.26
1477	Bulteau Desprez Richest.....	16.02	14.07	87.89
1478	Dippe's Vilmorin.....	17.10	14.01	81.93
	ANOKA—			
1457	Department seed, varieties not given.....	18.14	13.95	76.90
1462	Department seed, varieties not given.....	17.92	14.09	78.63
1463	Department seed, varieties not given.....	18.40	14.99	81.47
1464	Department seed, varieties not given.....	17.16	14.00	81.58
1465	Department seed, varieties not given.....	18.50	14.84	80.21
1466	Department seed, varieties not given.....	17.92	14.42	80.47
1467	Department seed, varieties not given.....	18.14	14.35	79.11
1468	Department seed, varieties not given.....	17.24	14.51	84.74
1469	Department seed, varieties not given.....	17.24	13.39	77.66
	NEW ULM—			
1447	Fl. Desprez Richest.....	16.20	12.53	77.34
1448	Dippe's Kleinwanzleben.....	15.50	12.42	80.12
	HUTCHINSON—			
1454	*.....	20.23	16.83	83.23
	CLARE CITY—			
1459	German Imported.....	17.46	14.63	83.79
1460	.....	19.36	15.69	81.04
1461	.....	17.62	14.28	81.04
	HAMPDEN—			
1475	German Imported.....	17.94	14.15	78.87
	RED WING—			
1455	LeMaire's Richest.....	19.62	15.16	77.26
1456	Fl. Desprez Richest.....	21.88	17.92	81.90
	ZUMBROTA—			
1488	*.....	22.00	16.98	77.14
1489	*.....	19.12	14.65	76.62
	HASTINGS—			
1446	Dippe's Kleinwanzleben.....	14.00	12.03	85.93
1449	Fl. Desprez Richest.....	12.72	10.23	80.42
	FREEBORN—			
1440	*.....	19.00	15.71	82.70
	LUVERNE—			
1483	*.....	16.32	12.59	77.14
	LE SUEUR—			
1484	.....	20.20	13.83	68.47
	FOND-DU-LAC—			
1487	Dippe's Kleinwanzleben.....	23.26	17.87	76.83
	ALBERT LEA—			
1502	*.....	17.20	11.57	67.25
	HALLOCK—			
1503	*.....	21.58	13.65	63.26
	MANKATO—			
1479	.....	11.84	8.00	67.56
1480	*.....	12.04	8.64	71.76
1481	LeMaire's Richest.....	14.24	10.79	76.26
1482	Fl. Desprez Richest.....	15.50	11.23	72.47
1490	Atlee Burpee & Co.'s.....	17.48	11.86	67.85
1491	*.....	17.98	12.14	67.54
	GLYNDON—			
1492	S. LeGrand's White Improved.....	11.15	5.24	55.98
1494	Bul. Desprez Richest.....	13.82	8.98	65.00
1495	Lane's Improved.....	10.72	7.19	67.07
1496	Fl. Desprez Richest.....	12.10	7.77	64.30
1497	Will's Seed.....	13.82	8.83	63.80
1498	Dippe's Kleinwanzleben.....	16.52	12.40	73.91
1499	Dippe's Kleinwanzleben.....	17.38	12.96	74.56
1500	Dippe's Vilmorin.....	17.65	13.37	75.75
	WATERVILLE—			
1501	Fl. Desprez Richest.....	20.85	16.98	81.44

\* Seed furnished by U. S. Dept. of Agl., but name not given with samples.

## SUGAR BEETS IN NEBRASKA.

In 1888 and 1889 sugar beets were raised in various places in Nebraska, the results at Grand Island being particularly good. To show how improvement has progressed with more knowledge of the requirements of cultivation, and for comparison with our results, the following analyses are quoted:

## GRAND ISLAND BEETS, 1888.\*

SOLIDS.	SUGAR.	PURITY.	SOLIDS.	SUGAR.	PURITY.
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
17.2	14.9	86.00	16.0	13.71	85.70
18.9	16.1	85.00	17.1	14.20	83.00
19.5	17.5	89.00	16.3	13.10	80.40
21.4	19.2	90.00	18.9	15.80	83.60
19.7	16.7	84.00	18.2	15.20	83.50
21.8	19.8	90.00	18.4	15.90	86.40
18.8	16.4	87.10			

## GRAND ISLAND BEETS IN 1889.

SOLIDS.	SUGAR.	PURITY.	SOLIDS.	SUGAR.	PURITY.
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
23.7	14.14	59	23.7	20.28	86
23.7	16.90	71	23.7	20.29	86
23.7	20.27	86	23.7	21.41	90
23.7	19.10	80	23.7	18.25	77
17.1	13.52	80			

## FROM OTHER LOCALITIES IN 1889.\*

SOLIDS.	SUGAR.	PURITY.	SOLIDS.	SUGAR.	PURITY.
Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
21.6	13.28	61	19.3	10.13	52
17.0	11.49	68	23.7	15.32	65
23.7	19.52	80	23.7	13.51	58
19.3	9.91	51	23.7	9.69	40
20.4	10.14	50			

\*Dr. Wiley, loco citu.

The results of 1890, at Grand Island, Neb., Mr. Oxnard states that the highest percentage of sugar in the beets was a little over 21 per cent., and the average 16 per cent. The yield varies from 10 to 20 tons. We have bought all our beets from framers during the past year. Owing to the excessive drouth in this section last year, the cultivation of beets has not been entirely satisfactory.





## FINANCIAL REPORT OF COUNTY AND DISTRICT AGRICULTURAL SOCIETIES FOR THE YEAR 1892.

DATES, 1892.	Active members	Name of society.	Where held.	No. of entries.	No. of awards.	Amount received from state.	Total receipts.	Paid in premiums.	Paid in purses.	Total expenses.	Present value real estate.	Present worth of society.
Sept. 24	.....	Atkin County Stock Breeders Assn.	Atkin	681	233	\$210.53	\$705.30	\$420.00	\$50.00	\$654.57	.....	\$105.58
Sept. 21, 22, 23	.....	Anoka County	Anoka	.....	.....	210.53	711.55	412.45	23.10	710.14	640.50	1,937.41
Sept. 18, 19	186	Blue Earth	Garden City	766	372	210.53	1,380.88	277.00	.....	1,399.98	529.90	306.21
Sept. 25, 24	79	Brown County	New Ulm	675	261	210.53	869.23	262.75	.....	704.53	.....	537.34
Sept. 27, 28, 29	100	Carver County	Carver	411	185	210.53	349.93	190.00	75.00	312.59	1,000.00	2,302.93
Oct. 4, 5, 6	.....	Chisago and Pine Co.	Rush City	213	125	210.53	2,142.08	643.19	132.50	2,538.58	1,000.00	1,609.71
July 20, 22	.....	Carlton County	Barnum	229	102	210.53	545.10	130.00	121.00	392.29	375.00	1,132.58
Sept. 21, 22, 23	100	Clay County	Woodhead	129	102	210.53	645.83	328.40	.....	578.25	1,200.00	483.42
Sept. 20, 21, 22, 23	371	Cottonwood County	Windom	299	210	210.53	1,354.01	972.10	370.00	1,310.50	.....	4,822.43
Sept. 21, 22, 23	45	Dodge County	Kasson	685	439	210.53	1,026.76	414.50	116.15	1,084.35	2,200.00	.....
Sept. 10, 20, 21	.....	Dakota County	Farmington	449	263	210.53	1,576.05	267.90	.....	1,254.97	.....	1,488.00
Sept. 22, 23, 24	.....	Fairbault County	Blue Earth City	622	354	210.53	1,872.50	725.00	525.00	1,867.50	1,000.00	1,387.15
Sept. 13, 14, 15, 16	102	Joint Stock	Winnebago City	304	468	210.53	2,599.84	737.87	355.00	2,520.19	1,500.00	4,084.69
Sept. 29, 30, Oct. 1	61	Fillmore County	Preston	1,012	551	210.53	2,061.25	237.00	1,075.00	2,020.21	.....	1,500.00
Sept. 29, 30, Oct. 1	239	Freeborn County	Albert Lea	63	42	210.53	2,423.43	333.25	372.75	2,429.43	.....	1,500.00
Oct. 4, 5, 6, 7	.....	Fergus Falls Driv. Park	Fergus Falls	336	216	210.53	1,383.76	573.95	470.00	1,360.77	1,500.00	1,238.99
Sept. 20, 21, 22, 23	.....	Goodhue County	Zumbrota	640	418	210.53	331.67	159.75	.....	248.82	.....	91.32
Sept. 15, 16	67	Hastings Ind. Union.	Hastings	177	133	210.53	1,646.63	106.00	208.00	1,582.27	1,509.00	2,539.36
Sept. 29, 30	148	Houston County	Caledonia	305	175	210.53	707.22	226.00	68.00	707.22	.....	.....
Sept. 26, 27, 28	124	Isanti County	Cambridge	390	197	210.53	1,909.10	432.65	680.00	1,879.98	2,000.00	2,289.29
Sept. 20, 21, 22	195	Jackson County	Madison	802	309	210.53	2,157.90	623.90	1,000.00	1,377.80	2,000.00	2,596.66
Sept. 13, 14, 15	.....	Lac qui Parle County	Le Sueur	364	261	210.53	1,397.89	357.67	359.50	1,330.87	900.00	520.54
Sept. 13, 14, 15	.....	McLeod County	Hutchinson	555	373	210.53	351.41	242.20	.....	1,645.28	2,500.00	4,539.77
September	63	Morrison County	Little Falls	12	12	210.53	1,685.05	326.50	430.00	987.42	250.00	394.88
Sept. 13, 16, 17	.....	Murray County	Currie	710	339	210.53	987.42	214.25	171.00	992.74	.....	291.52
Sept. 27, 28, 29	105	Marshall County	Farmington	475	271	210.53	1,137.62	294.00	245.00	1,257.85	3,000.00	6,103.19
Sept. 15, 16, 17	65	Nobles County	St. Peter	464	260	210.53	2,059.37	336.00	849.00	2,028.95	.....	677.30
Sept. 13, 14, 15	.....	Nicollet County	Worthington	415	219	210.52	2,057.14	396.00	254.00	1,117.71	.....	90
Sept. 19, 20, 21	74	Pipestone County	Pipestone	386	266	210.52	878.48	389.80	50.00	405.55	1,200.00	873.08
Sept. 29, 30, Oct. 1	42	Tracy Dist. Fair Assn.	Tracy	443	309	210.52	1,198.99	145.00	65.50	403.11	.....	.....
Sept. 20, 21, 22, 23	40	Waseca County	Waseca	166	102	210.52	465.45	259.75	.....	403.11	.....	.....
Oct. 7, 8	.....	Wright County	Howard	236	265	210.52	472.19	234.00	.....	.....	.....	.....
.....	.....	St. Vincent Union Ind. Assn.	St. Vincent	236	265	210.52	472.19	234.00	.....	.....	.....	.....
.....	.....	Stevens County	Morris	478	235	210.52	472.19	234.00	.....	.....	.....	.....

## Annual Meeting of the Minnesota State Agricultural Society.

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ST. PAUL, January 10, 1893.

Pursuant to law, and the regularly published call, the State Agricultural Society convened in room 16, at the state capitol, in St. Paul, on Tuesday, January 10th, 1893, at ten (10) o'clock A. M.

The meeting was called to order by President J. H. Burwell, and the call read by Secretary W. F. Cross.

The minutes of the last meeting were read and on motion approved.

On motion of Frank Warner, of Carver, a committee of seven, one from each congressional district, was appointed by the Chair as follows:

District 1.....	E. T. Stebbins.
District 2. ....	Lysander Cook.
District 3.....	Joel P. Heatwole.
District 4.....	B. D. Eddy.
District 5.....	D. H. Moon.
District 6.....	John Cooper.
District 7.....	

On motion a recess was taken until one P. M.

Re-assembled at one P. M., according to adjournment.

On motion the following named persons were elected as life members, they being on the board of county commissioners at the time that Ramsey county presented the fair grounds to this society: C. D. O'Brien, George H. Hazzard, Charles T. Konantz and Henry Schnider.

Joel P. Heatwole, chairman of the committee on credentials presented the following report:

*Mr. President:*—Your committee on credentials find that the following named persons are each entitled to seats in this convention:

Carver County Agricultural Society—Frank Warner, John Hebeison and Geo. Zanger.

Carleton County Agricultural and Industrial Association—C. L. Goodell.

Mower County Agricultural Society—L. D. Carter, Aaron Kimball and A. W. Allen.

Stevens County Agricultural Society—C. L. Brown, J. D. Good and H. W. Stone, Sr.

Blue Earth County Agricultural Society—L. Cook and G. Gutterson.

Rice County Union Agricultural Society—Jos. Roach, Joel P. Heatwole and L. Johnson.

Waseca County Agricultural, Mechanical and Industrial Society—Allen S. Hawkes, H. F. McGonagle and Samuel Leslie.

Le Sueur County Agricultural Society—C. N. Cosgrove, Jno. Wacek and A. B. Moffet.

Steele County Agricultural Society—Clarke Chambers, 3 votes.

Chisago and Pine Counties Agricultural Society—V. D. Eddy, 3 votes.

Faribault County Agricultural Society—J. A. Keister, F. W. Temple and G. W. Buswell.



Dakota County Agricultural Society—B. Stevens, P. F. Bradford and J. R. Conway.

Swift County Agricultural Society—H. W. Stone, 3 votes.

Hastings Union Industrial Association—John Byers, A. N. Johnson and A. D. Aldrich.

Wright County Agricultural Society—W. H. Hoar.

Anoka County Agricultural Society—Thos. Coleman, C. S. Guderian and Jno. Hunter.

State Poultry Association—R. C. Judson, proxy for president.

Freeborn County Agricultural Society—Dor. K. Stacy, 2 votes.

Winnebago City Driving Park and Live Stock Co.—G. D. Eygabroad, M. H. Oliver and C. H. Patlen.

Dodge County Fair Association—B. F. Chase, H. B. Niles and A. A. Ca.

Douglass County Agricultural Society—James H. Letson, 3 votes.

Becker County Agricultural and Driving Association—M. S. Converse and G. W. Taylor.

Minnesota Beekeepers' Association—J. P. West.

Farmers Alliance—A. L. Stromberg.

State Forestry Association—J. H. Stevens.

State Dairymen's Association—T. L. Haecher.

Wilkin County Agricultural Society—Peter Hansom.

Goodhue County Agricultural Society—W. C. Rice, S. B. Barteau and B. C. Grover.

Martin County—Frank A. Day.

And all life members.

J. P. HEATWOLE,  
D. H. MOON,  
JOHN COOPER,  
H. W. STONE, SR.,  
H. EDDY.

#### OFFICERS AND BOARD OF MANAGERS FOR 1893.

President,	- - -	J. H. STEVENS,	- - -	Minneapolis
First Vice-President,	- - -	ED WEAVER,	- - -	Mankato
Second Vice-President,	- - -	DR. J. H. MURPHY,	- - -	St. Paul
Sec. and Supt. of Grounds,	- - -	W. F. CROSS,	- - -	Red Wing
Treasurer,	- - -	A. B. MOFFATT,	- - -	LeSueur

#### BOARD OF MANAGERS.

CLARKE CHAMBERS, Owatonna,	- - - - -	Term expires 1894
C. N. COSGROVE, LeSueur,	- - - - -	Term expires 1894
W. M. LIGGETT, Benson	- - - - -	Term expires 1895
J. H. LITSON, Alexandria,	- - - - -	Term expires 1895
J. J. FURLONG, Austin	- - - - -	Term expires 1896
E. W. RANDALL, Morris	- - - - -	Term expires 1896

#### EXECUTIVE COMMITTEE.

J. H. STEVENS.

ED WEAVER.

C. N. COSGROVE.

## CHEESE MAKING.

FERGUS FALLS, MINN., Feb. 14, 1893.

It is the usual custom when giving an article on cheese making, to give the process for making up good milk only. But the few remarks for which I am giving space, will be on but one of the four entries of cheese which I had at the State Fair, season of 1892, and was made from milk that was in bad condition, before it came under my control. This was in the extreme warm weather in June, and some of the milk on this occasion was somewhat tainted, while the other was over-ripe, and well developed with acidity, as it was received at a temperature of 84°. It was colored at the rate of one-half ounce to every one thousand lbs. of milk, and after being thoroughly stirred in, a sufficient amount of rennet was used, to have coagulation commence in from five to eight minutes. After a thorough stirring the vat was covered, and remained perfectly still for thirty minutes from the time the rennet was introduced which was followed by cutting, which was done thoroughly and completed at once. Care was taken to see that it was cut even and alike, so that the heating would be uniform, and the action of the rennet be on all alike.

Stirring immediately followed, in a slow and careful manner in order to give each kernel of curd a chance to heal over, which forms a skin or film that acts as a strainer, and allows the whey to pass out and retains the butter fats. After hand stirring for ten minutes, a small amount of steam was applied, and the temperature gradually raised to 90°. By heating too rapidly on the start, the film that should act as a strainer will become glazed, and the whey will have no way to escape only as the curd is broken, when the butter fats will pass out with it. The heating was still continued, and done so with more rapidity until it reached a temperature of 96°. When it was tried by the hot iron test and found to have one-fourth of an inch of acid, when the heating was continued still faster and farther, until it had reached 120°, when it was again tried and found to have nearly one-half of an inch of acid. The whole time occupied in heating, was forty minutes. The curd was thoroughly stirred until it had reached that stage of contraction where it would not pack, and was all cooked even and alike. In one-half hour from the time the heat was shut off, it was again tried and found that the development of acid had made but little progress, and would not show to exceed one-half inch by the iron test.

The whey was then drawn, and salted immediately at the rate of two pounds of salt to every one thousand pounds of milk. The salt was thoroughly mixed with the curd, and then the curd was baked in the upper end of the vat, and allowed to remain there an hour or so, or until it had a mellow appearance, and a fresh smell like new buttermilk. The curd was covered so it would not cool down so low as to accomplish no purpose and was stirred occasionally so it would not pack, and so the activity of the rennet would be on all alike. After hooping the curd, the pressure was at first slow, and gradually increased, and was thoroughly pressed for sixteen hours. Some of the cheese were placed on the factory shelves with the usual temperature, which I found would not get sharp as soon as these made with the lower temperature with the same amount of acid, and the cheese were less porous and more nutty. The remainder of the cheese were placed in a cool cellar with a double set of cloth all

over them. The cheese soon became moldy on the outside, but by removing the outer cloth on the third day of September, the cheese were perfectly clean and firm, with a milk nutty flavor. Following is their score of test made by Dr. W. S. Eberman, *Chemist*:

Water.....	27.62
Fat.....	37.82
Caseine.....	34.46
Total solids.....	72.28
Fat, to total solids.....	52.32

### THE FARMER AND THE HOG.

Having been identified for a quarter of a century with the agricultural interests of Minnesota, and having many opportunities to observe the condition of our farming class of citizens, and to note from time to time the glaring mistakes that have been committed, is the only incentive that prompts me to "rush into print," in order, if possible, to say something that will prove beneficial to our farmers.

Minnesota is a great farming state, and there are no material interests within its border that will contribute to the general prosperity like success among our farmers. We have a fine climate, good soil, and all the natural conditions for profitable and remunerative farming; the only drawback is an apparent determination among our farmers to produce nothing but *wheat* and small grain, wheat practically being the principal product of the farm.

From a close observation for twenty-five years, I am fully convinced that no farmer can produce wheat, exclusively, for twelve consecutive years without going into helpless bankruptcy.

The crying need of the times, is *diversified farming*. Every farmer should raise at least ten or twenty good hogs, and this can be done on every farm in Minnesota. A great many farmers seem to think that in northern Minnesota, where corn may not grow successfully, that hogs cannot be successfully grown, but such is not the case. I know several of the most prosperous farmers in that locality, who for years past have raised the finest kind of hogs, without corn—the hogs consuming the screenings of the farm, and "topping off" on barley. "Barley hogs" are a success; try it and be convinced. Within the past few years a market at South St. Paul has been created for all the hogs Minnesota can produce. Hundreds of thousands are bought and packed every year, and the demand is increasing.

Good brood sows can always be bought at South St. Paul, so that farmers may make the experiment with little trouble. A year ago, I published an article on hog raising and predicted the present low price of wheat and the corresponding very high price of hogs. A good hog to-day is worth from eighteen to twenty dollars. It only requires ten months to grow a hog. Every farmer in Minnesota should put forth an effort to secure some good breed of hogs, and make an effort to advance his own financial interests by diversifying the products of the farm.

Very truly,

R. C. JUDSON.



MINNEAPOLIS, MINN., December 17, 1892.

*Wm. F. Cross, Secretary State Agricultural Society, St. Paul, Minn.*

DEAR SIR:—Replying to yours relative to the culture of Irish potatoes in what is known as “the potato district,” lying just north of the cities of Minneapolis and St. Paul about forty-five to fifty miles, we beg to submit a few facts which we hope will give you a just appreciation of this wonderful district, whose record, new as it is, is probably not equalled by any similar district in the country. Bear in mind all the time that those fertile lands that have made this wonderful record are the cheapest in the State. They can be purchased at a very low price; not one acre in ten has been improved, and when you remember that six years ago the culture of potatoes was commenced in this district and has grown to such proportion, is it not surprising that these lands should be so cheap? Thousands of acres along the line of the St. Paul and Duluth road can be purchased from private parties at from \$2.50 to \$4.00 per acre. They are easily cleared, being covered with a light growth of oak timber, and can be planted with potatoes the first year.

The record of the rain-fall of this district, kept for several years by the government, shows that the rain-fall as well as the sunshine comes about the right seasonal period for the perfect growth of this crop.

During the past six years, the seasons of 1887, 1890 and 1892 were partial failures throughout the United States, yet in this district there has never been a failure, and the average yield per acre for those three years was about one hundred and forty bushels to the acre, and the average yield for the past six years has been one hundred and fifty-five bushels per acre; many acres have yielded three hundred to four hundred bushels per acre.

The average yield per acre of potatoes the United States over, this year is sixty-two bushels, and for 1890 was fifty-seven and one-half bushels, and the average for ten years for the United States was eighty bushels per acre. Last year, a phenomenal year for this crop, showed the average per acre was a little less than ninety-four bushels. Note, therefore, that an acre of this famous Minnesota district spoken of, is worth on an average more than two acres of the average land, yet they cost probably not more than one-fifth the amount of the average lands.

In 1886, we paid in this district F. O. B. cars direct from the fields forty cents per bushel; in 1887 we paid direct from the fields fifty to sixty cents per bushel, averaging fifty-five cents; in the spring of 1888 we paid as high as ninety-three cents F. O. B. cars; in 1889 we paid twenty cents; in 1890 we paid direct from the fields an average of fifty-five cents and in the spring as high as ninety-five cents; in 1891 we paid from the fields eighteen to twenty cents. This was the heaviest crop year since the government kept a record, yet we took out all the potatoes at from eighteen to twenty cents in the fall, to twenty to twenty-eight cents in the spring.

This year we have paid from forty cents early in the fall to fifty-seven cents later in the fall from the fields F. O. B. cars.

Potatoes can be raised at a cost to the farmer of about thirteen cents per bushel on these lands, and you can, therefore, figure for yourself whether there is money in it or not.

As to the quality of these potatoes, no better stock is grown in the world. We put over 1,000 cars into the New England states in 1889 against the famous Aroostock county Rose and Hebrons. Eastern people thought the Maine potatoes could not be equalled in the world, and at first they would not take our potatoes without a discount of ten to seventeen cents per bushel, but along toward the latter part of the season, the quality proving to their satisfaction, they took our potatoes at the same price as the famous Maine stock, and was glad to get them, many people preferring them.

In Texas the farmer wants nothing but Minnesota Red Rose for seed. Along the river bottom country they want the Minnesota Ohios in order to insure them the right kind of a crop, and throughout all the states they are favorably known, no potatoes bringing a higher price than the best Minnesota stock.

Our accurate knowledge pertaining to this crop, except the actual cost of raising it, induced us to purchase and fit up the largest and probably the best potato farm in the United States at a cost to us of about \$15,000, the original land of which cost us but \$1,000, and the investment has been eminently satisfactory to us.

The profits made in raising this product in the district spoken of above the last six years were such that, were it generally known, would open the eyes of the farming world.

As to the increase of the crop: Six years ago there was raised on the line of the St. Paul & Duluth Ry. about 150 car loads, the major portion of which was purchased by the writer, it being his first season in the potato business in this locality. There has been a steady increase until this year the crop of the road is about 2,500,000 bushels. There are thousands of acres just as desirable lying adjacent to those cultivated and further north, along the line of the road, and we believe in five years there will be 5,000,000 bushels of this product raised and marketed at a profit from this district.

With so many potatoes raised for market, there are a great many small and inferior potatoes unfit for consumption, to take care of which the writer and others erected four starch factories at different points on the road; which factories pay eighteen to twenty cents per bushel for the culls, and work them up into starch.

Other vegetables, onions, cabbage, beets, carrots, etc., grow fine and will eventually be big crops.

There will be paid this year to the farmers of Chisago and Isanti counties over \$1,000,000 for potatoes alone.

Our house will handle this crop year 1,500,000 bushels of potatoes, and the supply is not great enough for the increasing demand, therefore, you may assure yourself of the permanence of this business, for the profits in the culture of the crop are large, and the outlets are equally large. It has come of natural causes and will abide with us, growing with the turn of seasons.

More could be said, but hoping I have sufficiently covered the ground, I am, dear sir,

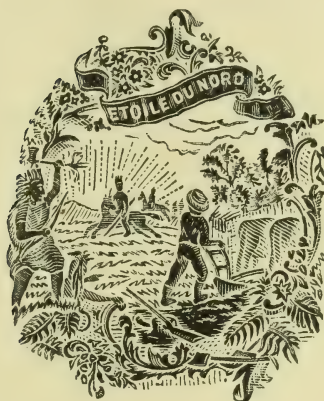
Yours truly,

S. H. HALL,  
of S. H. Hall & Co.





# THE FOREST TREE PLANTER'S MANUAL.



EIGHTH EDITION.

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By J. O. BARRETT, Secretary of the Association,  
MINNEAPOLIS, MINN.

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Published by the MINNESOTA STATE FORESTRY ASSOCIATION, in  
accordance with an act of the Legislature, approved  
April 21, 1891, for free distribution to  
any citizen of Minnesota.

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MINNEAPOLIS:  
HARRISON & SMITH, STATE PRINTERS.  
1893.



## SECRETARY'S REPORT.

### The Outlook.

*His Excellency, Hon. Knute Nelson, Governor of Minnesota:*

DEAR SIR.—In the act that furnishes the State Forestry Association with the “sinews of war,” occurs this passage:

“For the Minnesota Forestry Association, to be expended by said association for the promotion and encouragement of raising forest trees on the open prairie, for the free distribution of forest seeds and plants to such citizens of the state as will follow its instructions, for the gleaning of facts in relation to the extent and damage done by forest fires, and the effects of devastation upon our water systems and agricultural industries, for the projection of practical methods by which to prevent and extinguish such fires, and by which also to revive the growth of young timber trees on the denuded, non-agricultural sections of the state, and in the preparation, publication and free distribution throughout the state of new editions of the “Forest Tree Planter’s Manual” together with other forestry literature, containing plain and concise information for the people upon practical forestry, and in the payment of actual necessary expenses of the officers, three thousand dollars (\$3,000).”

Herculean indeed is the task assigned us; but the co-operative interest your Excellency has exhibited and that of the legislators who determined the association of twenty years standing shall live to perform its beneficent mission, together with that of the many friends over the state who have stayed up our hands when weary in, but not of, our work, give us new courage to persevere until we have conquered even a climate.

#### EXPENSE ACCOUNT.

Election of officers, Feb. 3, 1891.  
Feb. 3, 1891, Forestry Association by funds in treasury \$131.93

#### EXPENSE.

March 19 to April 25, 1891, postage, circulars, letter heads, etc.....	\$54.93
April 25, 1891, labor services six months .....	77.00
	<hr/>
	\$131.93    \$131.93
Aug. 1, 1891, Forestry Association by legislature appropriation .....	\$1,500.00



## EXPENSE.

Aug. 10, 1891, printing circulars.....	\$8.00	
Aug. 17, 1891, personal labor.....	50.00	
Aug. 17, 1891, postage .....	10.00	
Aug. 19, 1891, Harrison & Smith, printing 5,000 copies Forest Tree Planter's Manual.....	75.00	
Sept. 1, 1891, personal labor during August. ....	100.00	
Nov. 2, 1891, personal labor September and October. .	150.00	
Nov. 2, 1891, Co-operative Printing Co., circulars. ....	3.00	
Dec. 2, 1891, personal labor during November.....	100.00	
Jan. 1, 1892, personal labor during December.....	100.00	
Jan. 5, 1892, attending American Forestry Associa- tion Washington, D. C.....	60.00	
Jan. 8, 1892, postage .....	15.00	
Feb. 3, 1892, personal labor during January.....	100.00	
Feb. 3, 1892, circulars. ....	6.50	
March 1, 1892, personal labor during February.....	100.00	
April 1, 1892, personal labor during March.....	100.00	
April 1, 1892, postage .....	15.00	
May 4, 1892, personal labor during April.....	100.00	
May 19, 1892, 500 letter heads and envelopes .....	17.50	
June 7, 1892, personal labor during May .....	100.00	
July 8, 1892, personal labor during June .....	100.00	
July 8, 1892, postage.....	20.00	
June 12, 1892, L. H. Wilcox, attending committee meetings.....	14.85	
July 13, 1892, postage .....	20.00	
Aug. 1, 1892, personal labor during July.....	100.00	
		\$1,479.85
Balance in treasury.....		20.15
		<hr/>
		\$1,500.00

Average personal expense per month for the 18 months, commencing Feb. 3, 1891 and ending Aug. 1, 1892, \$70.95.

## SUMMARY OF WORK DONE.

During the 18 months ending the first fiscal year, 10,000 of the two editions of the Forest Tree Planter's Manual were issued and circulated over the State; the same were printed in the reports of the State Agricultural Society, and a special forestry edition in the annual of the Farmers' Institute, all of which, including the forestry department under my charge in the report of the State Horticultural Society, and other forestry pamphlets donated by Prof. W. H. S. Cleveland and Prof. B. F. Fernow, Chief of the Forestry Division of the Department of Agriculture at Washington, D. C., amount to over 50,000 copies freely distributed by mail and other methods.

With our membership fees we were enabled to distribute large quantities of evergreen plants and deciduous seeds to various parts of the State, the reports of which thus far received indicate a general success in their growing and doing well.

It is due to credit to add, that The Progressive Age, Farm, Stock and Home and Northwestern Agriculturist, all published in Minneapolis, and Northwestern Farmer, St. Paul, have allowed me special departments in their columns in all their issues for instruction in practical forestry, thus reaching through these and other channels, weekly, monthly and semi-monthly, 500,000 readers.

The dailies of the Two Cities and the weeklies of the country have generously allowed my forestry articles to be published in their columns. Without exception they have exhibited an unflinching co-operation in the work to which I have devoted all my time and energies.

#### GROWTH OF FORESTRY SENTIMENT.

With comparatively but little means in hand, antagonized by parties ignorant of our objects, our association has patiently battled away, and now stands on vantage ground. In state conventions two political parties of our state this year planked the claims of forestry in their platforms, helping us to quite an extent. The other parties are certain to follow example, making the movement non-partisan, where it has ever stood. Farmers, lumbermen and other business and professional citizens, are earnestly demanding the establishment of a more economic system of forestry. The antagonists of it, as in other states, are beginning to discover that the movement is of great and practical importance to perpetuate our lumber interests, conserve our waters, protect our crops and secure healthful conditions and beautiful environments for all our people.

With high respect, Yours for the Trees,

J. O. BARRETT,  
Secretary State Forestry Association.

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If every land-owner could be made to realize the fact that our forests yield a revenue to the country immensely greater than the combined wealth of all our mines, surpassing even the value of our great corn crop by nearly 200 millions of dollars, and above all that this enormous timber-harvest, which for the last census year amounted to 700 millions, involved a sacrifice of forest wealth, chargeable to carelessness, to nearly one-half as much more, it would be a powerful incentive to reform; and the improvident greed which, for want of a better market, destroys a two-dollar tree to get a 35 cent railroad tie, would become a thing of the past.—M. G. KERN, St. Louis, Mo.

## Utility With Beauty.

Millions upon millions of forest seeds fall upon the ground, scattered hither and thither by the winds, few of which will ever take root. Not one person in a thousand has ever thought of gathering them for planting and culture or for the market. The time is coming when the harvesting of such will be a paying business, and our business is to develop it. Our seeds are wanted in the South, but the seeds of the South are not wanted by us. Climatic conditions inhere with the germ, and are transmissible. It has been repeatedly demonstrated that northern grown seeds for northern planting, are the hardiest and most reliable.

Every farmer should have a tree nursery of his own. Economy is thrift. With right treatment, he thus has the best of seedlings at the least cost. No farmer should think of raising a crop of cereals or vegetables without a crop of trees to protect them and furnish them with humus and moisture. On an average, from year to year, a forest-protected crop gives at least a quarter more yield than one raised with equal culture on the open, wind swept prairie.

### METHOD OF PLANTING TREES.

Do you propose to have a tree nursery? All right. Of course you have the seed on hand. Is your ground plowed deep, say ten or twelve inches, and pulverized fine as for corn? All right again. Sow them in long drills so you can use the cultivator and save time. Cover the box elder, the ash, the maple about an inch; three-quarters is safe. When the basswood seeds are ripe, gather them sure, for the tree is very valuable for honey and manufacturing purposes. It will grace the lawn, fringe the waters with beauty and sweetness, and be an Eden tree in the wood-lot. We ought to raise this tree all over the Northwest by the thousands and millions. Sow them just as soon as gathered and between rows of box elders to shade and succor them when young and tender. Serve the maples the same. The "fittest" then, is what we need—the basswood, the maple, the oak, the butternut, the hickory, the walnut, the pine and other evergreens. The nut seeds may be safely planted in November, where they are wanted for a perpetual legacy to home and country. Plant, say, eight feet apart, between rows of box elders for shelter, which can be removed when the precious candidates are strong enough to support themselves. Cover the nuts about two inches. Seeds designed to be kept over winter should have a dry, cool place. Some sand mixed in will be a "savor of life."

### BUY THE RELIABLE.

If from necessity you have to buy seedlings, buy of reliable nurserymen who raise them in the Northwest. The nearer home the better. Select one-year-old trees; they do better. Where you ship in from far distances, the trees are liable to heat, and then you lose them and your money too. The cheapest is the best, though it cost a little more. In our dry climate spring planting is safer than fall planting.

### HEALING IN AND PLANTING.

But buy in the fall and ship in immediately, so that your plants can be ready early in the spring and in the best condition. When in hand, select a well drained spot; dig a trench, say, six or more inches deep, according to the size of the plants; throw the dirt back on a slant, cut the bands



without fail, lest the trees may heat; spread thin in the trench; sift in dirt fine and snug to the roots; throw on more dirt and press it down gently; pour in water if the ground is dry; fill up, and thus you have another trench for the next instalment, all in shingle fashion. Cover thin on the tops. Now your plants are safe and the broken points of the roots will be partly healed over in the spring.

When the ground is warmed up and moist, plant the trees well down and press down gently but effectually. Cultivate briskly until the middle of July and let the cells ripen up for the winter ordeal. The weeds will trap the snow and otherwise protect your plants.

#### NATURAL GROUPINGS.

Most all of us have made a mistake in putting our trees in squares or blocks like a city. This is stiff, artificial, unnatural, unseemly. Mountains lie in clusters and curves; so do the valleys; so do the clouds move and the rivers, and this is why they are picturesque. Let us copy nature in landscape architecture. Plant our trees on the more waste places, on the sides and crests of the hills, along the windings of the brooks and rivers and lakes. Curve them where they will look best, where we can have gaps to see through to what is beyond, where we can have large spaces for the fields and orchards and gardens, where our crops can be protected, breaking the wind at different points. Draw about the buildings the brightest birches, the cleanest elders, the most golden willows, the most symmetrical evergreens, the hardiest and most beautiful shrubs and vines and flowers, arranged in natural groupings, climbing over stones and walls and trellises. The useful thus becomes more useful for its natural beauty and home-like environment.

#### EVERGREENS FOR SHELTER BELTS.

Nothing is more beautiful and home-like than evergreens on the lawn. They should be planted also around the stock yard, the barn and other out buildings to serve as protection and hide deformities. They may be planted here and there through the orchard with very great advantage.

#### SCREENS.

Among the hardy sort of evergreens are the Scotch and Austrian pines, the Norway spruce, Douglass spruce and our own native white spruce, common red cedar and arbor vitæ, also our white and red pines, and the jack and bull pines. A single row of these trees, mixed for variety and mutual support, will afford much protection from the winds in a few years; but two or three rows are far more effective. Do not set them too near the orchard; give them room for the ample ventilation to the apple and plum trees; two rods are not as serviceable as three, and four rods are better. Alternate them, *quin cunc*, so that every tree shall be opposite the space in the next row. Plant them eight or ten feet apart.

#### HEDGES.

Do not set them close to the shelter belts, especially if allowed to grow high. Put them at least two rods outside the shelter belt.

#### MOST RELIABLE.

Evergreens from the wild forest are not as well rooted as those from the nursery; but they can be made to live with proper care in plucking up, packing and planting. In no case should they be allowed to dry the least. Keep the roots moist; never expose them to the sun or wind for a moment. Drying coagulates the juices, forms a gum, stops the circulation.

## TIME TO PLANT.

Always in the spring; don't wait till the trees are growing; take them up and replant before the buds have largely swelled.

## RIGHT SELECTION.

You want fine trees for the future; then be content with small ones, those that are three or four years old. They cost less and stand better chances to live than larger ones, and will soon overtake the large. This rule applies to all trees we plant and righteously care for. Your best is from the nursery that have been at least twice transplanted.

## PLANTING.

Spread the roots out natural and do it quick; press the fresh soil in close; have the plant at least put down one inch deeper than it grew in the nursery; water well at first if the ground is dry; leave a film of unpressed dirt on the surface; avoid putting any mulch in the hole, but spread on the surface out from the trunk; never dig deep among the roots of your trees; keep out weeds and binding grass. Your duty well done, the Great Gardener will give you sunshine and rain, and you will have "treasures laid up in Heaven," for you have improved the healthfulness and beauty of the world we now live in.

## EVERGREEN SEED.

Frequent inquiry is made how to raise evergreens from seed, and the statement generally is that the effort is a failure. It is indeed a thankless task unless one has the facilities and plenty of time for management. Prof. S. B. Green, of our Experiment Station, St. Anthony Park, makes a success of it, because he makes it a business and knows how. I herewith summarize his method for the benefit of those who would like to try. It pays a fellow to see the little things "bopeep," and grow under our fostering care.

1. Use a rotten, dry, sand-leaf mould for a seed bed.
2. Select a location for the bed away from woods or places where mice and squirrels abound. These depredators like such seed.
3. Sow the seed broadcast and sift on a covering of about an inch for the hardy evergreens, having large seeds such as the pines and the Norway spruce.
4. Arrange so you can shade at pleasure. Raise up the side boards about six feet for free circulation of air. Use willow brush or laths for shading. If laths, then nail about two inches apart, and shade north and south, so the shadows will pass east and west on the beds. Protect thus from the sun in very bright or long continued sunny weather both in summer and winter. After ordinary rains take off the shades, and not put on again until the bed is well dried off.
5. The greatest danger is when the plants are young and growing fast, especially when the weather is warm and moist.
6. "The damping" of evergreens in the seed bed may be greatly reduced, if not entirely prevented, by covering the seed bed with sand or other mulch.

### Durability of Timber.

With much rotting of timber and fence posts, there is a necessity of cutting large amounts of wood, involving faster deforestation, to say nothing of the vexation and loss by extra labor. Various expedients are suggested and employed that often prove injurious to the timber's preservation. Sometimes men paint green or badly seasoned wood, and thus hasten rather than prevent decay. We must understand that the decay of wood is traceable to the fermentation of the sap, probably a growth of bacteria or fungi. To forestall such results, the sap in the wood must be dissolved or dried out, thus preventing moisture from entering again. Timber will not rot if kept absolutely dry, or entirely submerged in water. It will be noticed that wood decays the faster on the side that lies on the ground. The looser, moister and warmer the soil, the more rapid is the decay. Dry rot obtains in woods that have no or poor ventilation, observable in white patches at first that change into brown or gray. A drying-out process, good ventilation and isolation from moisture will remedy this unhealthy condition. Heart-wood is more durable than sap-wood; but season the sap-wood and the difference disappears. Generally the heavier woods are the more durable.

#### TIME OF FELLING.

The time of felling has much to do with the durability. Early winter, say in December, when there is the least fermentable sap, has the preference. Then the timber will season with less care, more slowly and evenly. If you cut the wood "in the sap," of course fermentation occurs, inviting the attacks of insects, and necessitating more care in seasoning. A rapid seasoning produces an outside seasoning which creates a sort of coating that envelops an unseasoned interior, thus evoking a "heart decay," so to speak. If you cut the tree in the leaf, let it lie at full length until the leaves are withered, say two or three weeks, before cutting to size.

#### CHECKING.

Removing the bark from the felled trees aids the seasoning process, but not in the standing tree. The peeled log will season faster if lifted from the ground on blocks. Shield it as much as possible from sun and rain in some dry, airy place. Wood is very apt to warp and split if dried too rapidly; then the cracks collect moisture, inviting more rapid decay. Checking or cracking of logs may be prevented by coating the ends with oils. Covering them with linen cloth and paper so as to lessen evaporation will be a help. Side-cracks should be filled with tow or cotton. Slow seasoning is the safest. Twelve or eighteen months will do for most purposes; but for special work, from two to ten years is required.

"The best method of obtaining proper seasoning without costly apparatus in shorter time, is to immerse the prepared timber in water, from one to three weeks, to dissolve the fermentable matter nearest the surface. This is best done in running water; if such is not at hand, a bath may be substituted, the water of which needs frequent change. Timber so treated, like raft-timber, will season more quickly and is known to be more durable.

"If practicable the application of boiling water or steam is an advantage in leeching out the sap.



"Good coatings consist of oily or resinous substances which makes a smooth coat, capable of being uniformly applied; they must cover every part, must not crack, and possess a certain amount of plasticity after drying.

"Coal-tar, with or without sand or plaster or pitch, especially if mixed with oil or turpentine and applied hot (thus penetrating more deeply), answers best. A mixture of three parts coal-tar and one part clean unsalted grease, to prevent the tar from drying until it has had time to fill the minute pores, is recommended. One barrel of coal-tar (\$3 to \$4 per barrel) will cover 300 posts. Wood-tar is not serviceable because it will not dry.

"Oil paints are next in value. Boiled linseed oil or any other drying vegetable—not animal—oils, are used with lead or any other body (like pulverized charcoal) to give substance. Immersion in crude petroleum is also recommended.

"Charring of those parts which come into contact with the ground can be considered only as an imperfect preservative unless a considerable layer of charcoal is formed, and if it is not carefully done, the effect is often detrimental, as the process both weakens the timber and produces cracks, thus exposing the interior to ferments."

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### A Suggested Forest Management.

BY PROF. B. F. FERNOW, CHIEF OF THE FORESTRY DIVISION OF THE AGRICULTURAL DEPARTMENT.

Under present regulations lumbermen and most *bona fide* consumers can secure public timber only by circumvention, direct or indirect, of the law. As a consequence fraud and trespass, wasteful cutting, illegal acquisition of lands and material, destruction by fire and abuse of the administration if it attempted to execute the law, have been the rule.

The management of this part of the public domain has been denounced as unsatisfactory by every administration for the last thirty years, without securing legislative redress.

A tentative change was inaugurated by the law of March 3, 1891, which gave power to the President to reserve timberlands for forest purposes. [Here the author mentions the acres reserved, under President Harrison's administration.] It is desirable that this policy be extended to the effect of withdrawing all public timberlands from disposal by sale or entry and substituting disposal of stumpage by licenses under certain regulations somewhat similar to the Canadian systems, providing at the same time for a rational method of protection and eventually of a regulated forest management.

In such legislation the needs of the resident population as well as of the lumber business must be duly considered and the *onus* of protecting the property against destruction and devastation placed where it belongs, namely, upon the government, which representing the community, must be responsible for all interests of the future. To aid in the protection against fire and trespass, the army might be used, a measure which has been most successfully employed in the National Parks.

## FUTURE LUMBER INTERESTS.

It would appear that this method of protecting the communal interest in forests would be at the same time advantageous to the future of the lumber business. All lumbermen, therefore, interested in those sections of the country where public timberlands are situated and especially all lumbermen's associations should be concerned in the passage of such legislation by which in part at least their own pocket interest and that of the community are harmonized, and an example of what rational forest management contemplates may be established for imitation by private forest owners.

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**Water Reservoirs.**

The upper Mississippi river generally dries up during August and September; in the latter part of October commences flowing again. Similar phenomena are no doubt occurring elsewhere in the Northwest. It is no new thing of late years. How are we to account for this intermittent action? It is traceable, doubtless, to the fact that, during the hottest part of the season, when vegetation needs the most nutrition, the greater part of the moisture is absorbed by the roots and leaves and thence reconstructed or stored up in the plants and fruits, and the balance evaporated upon our thirsty winds, thus so monopolizing the water, scarcely a drop remains in the beds of some of our once living streams and lakes. After our crops, cereals especially, are matured, no more moisture can be utilized in that direction, being no longer needed, and the evaporation is correspondingly lessened because of the lowering of the temperature. This transition from growing to harvest conditions, together with colder ground and air, enables the springs to recuperate themselves; hence they flow again.

## A WATER FAMINE.

What is the inference from these data? Evidently that there is not enough water filtrating up capillaryly from below the soil to supply our agricultural vegetation and at the same time keep our streams and lakes flowing when most needed. If these conclusions are correct, it follows that with larger increase of agricultural productions, we may have a water famine, as compared with our needs, and that our soil and air will become drier and drier as the years come and go, unless we early forestall such calamities.

## OVERGROUND RESERVOIRS.

There is just so much water in the world, enough, doubtless, to sustain life in its civilized conditions, could it be economically utilized. With the destruction of our native forests come destructive floods, whose waters are hurled back into the sea whence they came. Often the accumulations of a whole winter of snow and rain turned to ice are thus needlessly wasted, which if saved would be quite enough to feed our vast fields of crops. Under these calamitous circumstances which we have engendered by deforestation and want of forests where they can best serve our purpose, it is our necessity to build overground reservoirs of

great dimensions, into which the spring waters from the melting snow and ice could flow, to be thence forced up to supply the people with their flocks and herds, and irrigate our fields and gardens.

#### DAMS FOR IRRIGATION.

Our prairie sloughs and coolies and mountain canyons can, by suitable dams, be used to hold back the wasting waters of spring for irrigation when most needed. Would we not thus be amply supplied with water far better for our purposes than artesian, which is more or less mineralized with properties illy fitted for vegetable growth? The advantages accruing would pay a thousand fold. This, with ample forests on the poorer sections, is certainly a feasible undertaking and pre-eminently practical.

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### Forest Fires.

Look at the burnt districts where thousands upon thousands of acres of valuable timber are utterly ruined, the very ground literally fire-eaten, leaving nothing thereon but leafless, black stubs of trees with scrubby poplars and tangling briars! People do deplore such calamities, lumbermen especially, but nothing is done to avert them. It is indeed saddening to witness the ruin wrought. Who sets these fires? Not the lumbermen, but some hunters and poachers are largely responsible, and homesteaders, too. A settler wants to clear his "felled piece." He waits till the stuff is well dried. He touches the combustible with a match and away the fire-fiend flies on ruin bent, till millions of valuable property, and not a few homes and lives, are destroyed. If this is not murder in the first degree, what is it? And some people look on, completely dazed, feeling a sense of superstitious awe, and are habitually if not religiously opposed to any interfering with the ways of Providence to punish folks for their sins!

#### PROPOSED REMEDIES.

We have so large a territory of woodland, most of which is sparsely settled up, any attempt to master the forest fires seems to many impracticable. But greater victories than these have been achieved in our age of progress. When such fires are in full headway, it is next to impossible to arrest them. Prevention is the best remedy. It is not to be expected that all fires will be prevented; but it is certain that with vigilant attention to the matter, they can be at least reduced to a minimum. Men prowling through the woods in the dry seasons, having no interests at stake, are careless with the camp fires and their pipes. A severe law is absolutely necessary that will force strict guard over the forest property, compelling careless hunters, fishers, and every other class of wanderers and settlers to obey governmental orders. The Forestry Association tried hard to induce the late legislature to enact some such law initiatory to protection against the careless or wanton setting of fires to our woodlands, but the matter was allowed to go by default. The result shows the necessity of educating the masses up to a practical comprehension of the situation. The Canadian government has quite a successful law in operation, respecting forest fires, so has New York, Maine, Pennsylvania and some other States. Minnesota needs one more perhaps than some of the prairie States. It is to be hoped that something will be done at our next legislature.



### A SOLDIER FORCE.

If we must have soldiers to keep the peace, why not in a time of peace put them to the most practical use? A test of this kind has already been made in the Yellowstone and other parks of the mountainous West, and has proved an admirable success. A large portion of our woodland territory still remains a public domain. Under the Reserve System now in agitation in our State, as well as elsewhere, such a police could have full control of the forests in time of danger. Strips of land could be burned off or otherwise cleared of combustible stuff, connecting bodies of water, thus limiting the spread of fires within special areas. Highways could be built on the section lines and kept clean from dry grass. Careless men in the woods would be on their guard when they know armed soldiers are patrolling over the territory to arrest the guilty party.

In Scandinavia and other parts of Europe, forest fires are rare exceptions, while with us of "free America" it is a rule of sheer abandon. It is certain that lumbermen, railroad men and others having investments in timberlands, are ready to co-operate with any movement under governmental management, that is equal or even partially equal to the necessity of the situation.

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### Our Parks.

Parks are perpetual institutions. While they answer as protection against the blighting effects of hot and cold winds and help in promoting humidity to a great extent, they are rural resorts and breathing places in summer, and instrumentalities of social amenities. The merry meetings under the embowered shades enable us to throw off care and recuperate for greater victories in the battle of life. Once popularize the park enterprise, and farmers, now so isolated and estranged from each other, will soon discover that the farm is not properly managed nor fit to live on and by, until feasible spots are covered with trees and vines and flowering shrubs. The new environments will invite neighbors, and a fellow feeling be evoked not yet realized in farm life. The transformation of some of the acres into beautiful parks will naturally develop the social loves of our being, giving a "silver lining" to every cloud of disappointment and care. A park—what is more attractive for children to play in, and the old folks to sit in, and the water springs to gurggle in, and the birds to sing in, as if they, too, could

"Read my title clear to mansions in the skies?"

Our large cities are giving special attention to parks. They are found to be sources of public healthfulness and refinement of ideals that naturally embody themselves in corresponding character. Why should not our country towns and rural neighborhoods follow the example, and even excel the cities in artistic arrangement where landscape variegation war-rants?

### ITASKA STATE PARK.

Through the instrumentality of Hon. J. B. Sanborn, of St. Paul, Congress has relegated to Minnesota, in round numbers, 20,000 acres for a State Park, beautifully located at the head waters of the Mississippi. It is in a wild and enchanted region, and will soon be of great value to the public as a place of resort when properly improved and enlarged.

## STATE SYSTEM OF PARKS.

There is a plan under consideration to abrogate the tax certificate system under whose provisions unpaid tax lands can be bought up by individuals for speculative purposes. The design is this: If the original owner does not redeem his land within the specified legal time, said lands are to be relegated to the town, county or state under specialized conditions, to be thenceafter consecrated to tree growing, as parks to all practical purposes, the profits of which accrue to the rightful proprietors for the payment of costs and further purchases and improvements. This would establish a park system on a grand scale, inductive to the further conservation of our forests.

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### Wood Pulp.

According to statistics of the wood pulp industry of the United States, 1890, there are 237 mills, having a total capacity, mechanical and chemical combined, of developing daily 4,000,000,000 pounds of pulp. In the last eight years the business has increased nearly 500 per cent. In 1888 the pulp stumpage was valued at \$2,235,000; the ground product was estimated at \$12,375,000. The figures also show that the present consumption of wood per annum for pulp is 1,000,000 cords. The percentage goes up with the increase of demand; and in a few years more, millions of cords will swell to billions. Couple the pulp consumption of our woods with what is used in sawn lumber and what fires annually destroy, and what will we have left at the beginning of the 20th century, unless immediate and ample arrangements are made to grow new forests on a scale commensurate with the demand?

Pulp was used first only for the manufacture of paper; now-a-days it is transformed into tubs, pails, barrels, water pipes, wash-boards, kitchen utensils, doors, caskets, flower-pots, horse shoes, carriage bodies, floor coverings, furniture, building ornamentations, and various other useful and beautiful structures. Indeed textile material resembling leather, cloth and silk have been manufactured from it. It forms a protective armor to torpedo rams. Bullets for rifle use are made of it. An entire hotel in Hamburg, Germany, has been constructed from it. Food products are derived from it, also alcohol. There seems to be no end to its uses. As the soft woods contain more cellulose than the hard woods, the former has as yet the higher commercial value.

Speaking of the adaption of our wood to pulp processes, Prof. Fernow says: "The fibers of conifers resemble those of cotton, are of considerable length, flat, tape-like and flexible, which characteristics impart to them superior quality. \* \* \* The poplars which have the longest fibers of those so far used, have the advantage of persistent white color, while basswood, next in value takes a reddish tint, birch a pink, and maple a purple hue, which makes it objectionable; larch is said to color very badly. Spruce, balsam, or hemlock, jack pine, cedar in the north, loblolly pine and cypress of the south, are at present staples. The spruce especially furnishes at present the bulk of pulp manufactured in this country, a frequent practice being to add some poplar or aspen pulp for the purpose of whitening the spruce pulp."

Minnesota has a vast resource for the pulp industry. Millions of her bog lands are densely covered with black spruce, and white spruce is quite common on the higher drained lands. The latter is one of the most enduring trees of our prairies. The poplars are immeasurable, growing everywhere on the denuded districts of our woodland country, and largely sprinkled among our other timber trees. The poplar is a rapid grower with us; in fifteen years it is suitable for pulp manufacture. Enterprising men in Minnesota are beginning to improve the pulp chances. The paper mill at Little Falls, for example, is doing an immense business in this line, profitable, too, for the farmers who supply the raw material.

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### Mosses.

A rich variety of mosses grow all over our wild woodlands and along the damp shores of our prairie streams and lakes. They cling to the rocks, hang in festoons over the water springs, climb the shady sides of the great trees without breaking their continuity, sometimes higher than one's head—lichen flora which the haunting Naiades have planted and trailed upward with sweet persuasion.

The mosses living on vegetable decay and even on the rifted rocks, suck up the moisture from the air and ground, and hold it in reserve from undue evaporation for distribution in mid-summer when most needed. How few people think of their beneficent uses! They do not pause to consider, that, in destroying the forests by axes and fires to the ruin of "God's first temples," they arrest nature's processes of vegetable resurrection, break down their capillary compensation provided for our common welfare, and thus break down our water reservoirs to the serious injury of the lumber and agricultural industries.

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### Hedge Management.

Joseph Meehan gives the following good points in the *Practical Farmer*: A hedge to be perfect must be broader at the base than at any other part. The first summer pruning is mainly to thicken the hedge and strengthen the base. To do this the top and most of the upper branches are clipped off, while the lower ones are touched but little in the old hedge, and not at all in the young one in which the shape has not been well formed. As soon as the tops are cut away the sap flows to those remaining, greatly invigorating them. In old hedges where shape and bushiness have already been attained, the whole of the hedge may be trimmed back to thicken it, but let the severest cutting be at the top. For every branch cut off, a half dozen new ones form, so that in time a hedge becomes so dense that a bird can hardly fly through it. After the first cutting there will be more growth made and this is allowed to grow on as long as it will. When all growth has stopped, which will be in September in the Middle States, the hedge is gone over again, and cut clean into a good shape, which should be neither too round nor too pointed. In connection with this it may be said here that single trees should be pruned in the same way that the hedge is. Bushiness comes from stopping the leading shoots, for they are done growing. Pruning in winter acts the other way, encouraging an extra strong top growth.



## Equilibrium Lost.

The kingdom of Spain was at one time the most opulent of the powers of Europe, but its decline dates back to the time when the destruction of its forests began; the climate became arid; the streams refused their life-giving flow to agriculture, and the broad lands that once yielded an abundant harvest had to be abandoned for lesser fields, situated nearer the sources of streams and in the mountain declivities. No forests had been reserved, as in the other countries of Europe, and when, in later years, they sought to remedy their great mistake by following the example of their neighbors, in the work of reforestation, they discovered, as one writer puts it, that while trees induce humidity, it first requires humidity to induce the growth of trees. Confronted by this important law of nature, they saw their well-meant efforts rewarded with only the most meagre and discouraging results, and realized then that the lesson taught them in the merciless school of experience had come to them too late for the relief of their country. They had waited too long; the point of climatic equilibrium had been passed; and it is doubtful whether even the matured experience of Germany in this science could successfully cope with the alternating drouths and floods that now prevail.—*Martin Conrad, Chicago, Ill.*

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## Wash for Trees.

So rapacious in the winter are the jack rabbits and other rabbits, and mice, too, even some of our most valuable forest trees are not exempt from their teeth gnawing. Treading down the snow may exclude the mice, but not the rabbits. Some men tie tar paper around the young trunks, but this is not to be recommended. It is too heating and draws the sun. Any kind of white paper is far preferable. The following wash is said to be an excellent thing:

Dissolve one pound of copperas in two quarts of boiling water, add this to a pail of ordinary lime white wash, this will cause it to thicken; add a handful of common salt; thin with water. The wash is now ready for use, and can be kept in a cellar, ready to apply at any time by not allowing it to dry up. Apply to trunk of trees in May and June to keep out borers, apply in fall to keep off rabbits. Applied last of January or first of February will prevent sun scalds. This wash is cheap and easily applied, and is useful on all kinds of trees.

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No use dwelling on the benefits to accrue from the planting of trees on the Northwest prairies. Let the government make a beginning by starting experimental stations, nurseries and plantations of trees, under the care of the mounted police, at every one of their permanent headquarters. It will be an example to the settlers; the young trees raised from seed, at a nominal cost in the nurseries, can be given to them. The work will not interfere with the duties of the mounted police, and it will interest and improve the men, in every way.—*H. G. Joly, of Quebec.*

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The woods hold the water; the water makes the meadows; the meadows the flocks; the flocks, the manure; the manure, the grain.—*French Forester.*

## Lumber Interests.

Pine lumbering in Minnesota has been the prime factor of rapidly peopling this part of the Northwest. The first saw mill used for the United States garrison, at Fort Snelling, was erected in 1821, at the falls of St. Anthony, the great Mississippi water power of the present city of Minneapolis. From the start this city has been the main center of the lumber industry. The year demarking the improved methods on a scale of vastness, is 1870. The production of lumber by the Minneapolis mills alone, dating in that year and ending in 1892, is estimated in round numbers, at six billion feet, board measure. It will exceed half a million this World's Fair year. Though this city still holds the vantage ground, there are lumber operations in all available parts of the State, Duluth being a strong competitor. "The tendency of all productive industry to centralization for purposes of economy and effectiveness is especially noted in the manufacture of lumber." Though we have, according to the statistical returns, about 330 mills, large and diminutive, in Minnesota, but few comparatively do the business. Practically our lumber interests to-day are under the control of three or four great capitalistic corporations. It is estimated that not over 25,000,000 feet of the standing pine are now owned by lumbermen outside of these corporations. There are large quantities of pines on School and State lands, the stumpage of which the independent lumbermen buy; and the order and rule everywhere are to "take everything clean, sound and defective, counted in just scaling." Fire has the rest.

### PINE TIMBER STILL LEFT.

The main body of the pines yet standing lies north of the Northern Pacific railway; south of it are scattered tracts, but fast receding under the increasing demand for lumber. The aggregate in solid feet of the pines still left to supply our markets, is variously estimated, some putting it as high as twenty billions. There is no possible way to measure here with certainty. Conservative men put it at thirteen billions in the several timber districts known as the Hastings, Red Wing, Winona, St. Croix Valley, Duluth, St. Paul and Duluth railroad and Red River.

### LUMBER EMPLOYES.

It is estimated that 800 men are employed in the pineries of the Mississippi waters. It takes, on an average, thirteen men to the million feet to get the logs. The exact figures of the cut in the mills last year, including shingles, are 1,344,000,000 feet. According to this data, then, the number of men employed in the woods was 17,472. Add 10 per cent. for increase of business over last year, and the figures stand 19,220 men for the whole State in the winter of 1893. It takes twelve men to the million for the manufacturing and delivery of the lumber. The wages paid to work hands exceed those of the agricultural industry, averaging, in the woods this year, \$29.50 per month and board; and at the mills, \$2.75, self-boarding, per day.

### HOW LONG WILL THE PINES LAST?

Among the principal mills operated by the great corporations, are those of Minneapolis, Duluth, Winona, Hastings, Stillwater, Little Falls, Brainerd, Carlton and Cloquet. The upright and circular saws in board-making are giving place to the band saws, that speed as with the teeth

of lightning, eating up the forests a thousand times faster than when we were boys and girls. The business is power indeed, eclipsing all other industries. What is done in Minnesota on this line is an index of other lumber states. The aggregate value of the wheat crop is but a third of the annual product of the woods. Summarize the value of all the stone quarries, petroleum resources, steam boats, sailing vessels, canal boats, and it is less than the annual value of the forest product of the nation. Put together the gross incomes of all the railway and transportation companies, and yet they come not up to the lumber of the states. The product of our woods in dollars and cents applied to-day, would more than wipe out the entire public debt. Is this mighty product diminishing? Yes, at the rate of 40 to 50 per cent. greater than the reforestation. Must Minnesota step down with her sister states? Yes, if the extinction of her pines is that step. How long will her pines last? Ask the insatiate markets; ask the axes; ask the band saws; ask the consuming fires. Date from the highest figures—20,000,000,000 remaining in the wilds of Minnesota—2,000,000,000 cut per year; how long? Ten years, and the last timber pine is sold! But the conservative estimate is safer. How long? Ere the twentieth century has dawned, the legacy we have inherited cannot be transmitted to our immediate successors. It is not pleasant to contemplate. But Minnesota is not forgetful of her public trust. Her mandate is, "reserve something—economize the cut—exclude the fires—grow new installments of valuable trees on all the waste places!"

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### Government Reservoirs and Trees.

By the munificence of the national government, Minnesota has laid the basis of a great water reservoir system, which, with a corresponding development of forestry to feed it, will become one of the most gigantic and practical on the continent. Elevated 1,275 feet, average, above the sea, it has sufficient decline for all flowage purposes, and so level is its surface, compared with hilly and mountainous districts farther west and east, the water can be readily retained without the usual expense of irrigable enterprises, for the abundant growth of vegetation wherever applied.

#### NATURE'S UNEQUAL DISTRIBUTION.

In an able paper written for the forestry meeting, held at the State Fair, September 8, 1892, Major W. A. Jones, of the Engineers Corps, U. S., in charge of the reservoirs at the head waters of the Mississippi, said: "All vital growth is dependent upon and largely nourished by water and oxygen. The atmosphere which envelopes the earth is loaded with the latter, and hence it is, with rare exceptions, within easy reach of all living forms. But water does not permeate the environment of all living things with precision and in sufficient quantity. Not enough of it gets into the atmosphere to go round; all sorts of things interfere with its air-line distribution, and, as a consequence, some localities get too much, others too little, and some none at all.

"Of the conditions under which the air gathers it up from the surface in wet places and distributes it over the earth in both wet and dry places in the form of rain, we know some, but not many, nor enough. We know



that the quantity of water carried away from a wet surface is a function of: (1) the temperature of water; (2) the carrying capacity of the air; and (3) of the quantity of air brought into contact with the surface in question. We know that while carried as vapor in the air, certain undefined conditions of heat and electricity will cause it to liquify and fall back to the earth's surface. But beyond this we are mostly in the dark. We can only believe what we see and foresee but a very little bit.

#### NOT ENOUGH TO GO ROUND.

We are thus led up to the fact that for considerable areas of land in the United States there is grave doubt as to whether the rainfall will continuously be sufficient for the cultivation of the soil. For still larger areas it is certain that the water supply is not sufficient. It is probably true that we are powerless to influence rainfall. But it is certainly true that we can as a matter of engineering skill, imitate nature by gathering water in great reservoirs in favored localities and lead it to and over and upon the unfavored ones. I cannot too strongly accentuate the fact that this is a matter of engineering, and must sooner or later be handled by engineers.

#### ART OF ENGINEERING.

"The art of the engineer is to control and adapt the forces of nature, in a feeble way, to the uses of man. He is the only one in the body politic of society who has practical experience in dealing with those forces in that way. He will tell you that the handling of water is the most difficult problem of his art.

I need not expand upon the application of all this to forestry. This art has for its object the preservation of the old, the creation of the new. Wherever it goes, water is a vital factor.

#### A COLOSSAL EXAMPLE.

"In the interests of the navigation of the Mississippi river, the United States has established a colossal example in the conservation of water. It is rather an obvious proposition that more water will improve the navigable capacity of any river. And the greater the navigable capacity of any waterway, the greater its commercial value. But it is not generally known that this latter value increases very much faster than the former.

#### CAPACITY OF THE MISSISSIPPI.

"It takes however, a great deal of water to help a river. The Mississippi, near St. Paul, requires over 3,000 cubic feet per second before it can accommodate boats drawing three feet of water. This means a little less than 2,000,000,000 gallons per day. The reservoirs are designed to furnish about that quantity of water during the period when the water in the river is ordinarily low. This period varies from sixty to ninety days, and hence the whole quantity that may be called for in a season is about 180,000,000,000 gallons. Their maximum capacity is about 675,000,000,000 gallons.

#### PRESENT RESERVOIRS.

"Four reservoirs are completed and in operation:

#### LAKE WINNIBIGOSHISH.

Watershed, 1,422 square miles.

Water surface, 110,206 acres.

Storage capacity, 344,000,000,000 gallons.

## LEECH LAKE.

Watershed, 1,225 square miles.

Water surface, 110,632 acres.

Storage capacity, 225,000,000,000 gallons.

## POKEGAMA.

Watershed, 630 square miles.

Storage capacity, 35,000,000,000 gallons.

## PINE RIVER.

Watershed, 602 square miles.

Water surface, 15,206 acres.

Storage capacity, 56,000,000,000 gallons.

## SANDY LAKE (NEARLY COMPLETE.)

Watershed, 384 square miles.

Water surface, 7,522 acres.

Storage capacity, 15,600,000,000 gallon."

## THE CANALS OF BABYLON.

The Major suggests that "the fertile plains of Babylon and Tyre were on the border land of desert." Very probable; for Babylonia is a dry steppe or table land, naturally fertile, but incapable of luxurious vegetation without irrigation, as are the Great Plains.

## THE WATER PROBLEM.

Estimating our average rainfall at 25 inches, we have in round numbers 274,725,378,027,281 gallons falling annually upon our State. What becomes of all this water? According to Lieutenant Maury, the precipitation of the Mississippi river basin amounts annually to 620 cubic miles of water. The estimate of the discharge into the Gulf of Mexico is 107 cubic miles. This leaves 513 cubic miles for evaporation and soil and vegetable absorption. Calculating the immeasurable hungry mouths of our crop vegetation growing in our soils, rendered porous by culture, it is safe to say one-half of our precipitation is thus absorbed, and this percentage is augmenting proportionate to the increase of population with corresponding increase of agricultural advancement.

Knowing that by virtue of location Minnesota is the lock and key of a continental commerce, master thinkers and engineers are studying the problem, how to utilize to best advantage the mighty tides of surplus waters that gather at her watersheds, which in the spring flood the plains here and below us, leaving but ruins of property and life in their wake, sure to react, as in Babylonia, into drouth and harvest destitution.

## DRAINING THE SWAMP LANDS.

A project is in agitation to drain the State swamp lands in the far north. They are now more or less overgrown with decaying black spruce and tamarac, and carpeted with mosses, reeds, cranberries, blueberries and other vines and shrubs, conserving vast bodies of moisture that feed our lakes and rivers, and are there of immeasurable benefit. But the time has come when they must be put to new and better uses without losing water supply. The claims of agriculture now take precedence. Properly drained they will make the best of farms, waiting to be subdued and occupied by intelligent emigrants. Our valuable timber trees,

such as the pines and hardwoods, cannot grow in swamps and bogs; they must have lands with natural drainage. There are enough non-agricultural lands to serve this purpose, and at the same time conserve our waters with equal facility under leady and root-matted floors.

#### CANALING THE WOODLANDS.

The proposition, therefore, of canaling the native woodlands for agricultural and commercial purposes, seems very feasible, and will no doubt be eventually consummated, having at length a net-work of irregular canals extending into prairie portions of the state. No floods need then accrue. The surplus waters will be conducted into the gulches, lagoons, lakes, and husbanded over the prairies, the whole system held in reserve by the government dams to be distributed when needed for river driving and navigation as now, and farm irrigation with certainty of crops.

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### Evolution of the Primaries.

Fine and beautiful as is Parian marble, when pulverized by burning, is it intrinsically valuable for crops? Not half so much as an equal volume in weight of lime from the chalk cliffs of England.—That marble and the chalk are alike carbon. Chemistry detects no difference here, but experience proves that, while the chalk is wealth, the burnt marble, so precious in crystallized form, is poverty itself to the plant.

#### NATURE AHEAD OF ART.

Certain rocks are phosphates, which also enter into the composition of plant tissue. Apply chemical analysis here, find therein the lime and the phosphoric acid, and find in the bone of animals the same constituents in the same relative proportions originally developed from the rock—is there any difference in crops? We might safely say the bone is seventy-five per cent. ahead of the rock, simply for the reason that it (the bone) has “passed through the chain of progression through which all the primaries have passed reproducing the higher form of organic life.”

#### CHAIN OF PROGRESSION.

Plaster of Paris is sulphate of lime; in the bone is sulphate of lime; and chemistry says it is one and the same; but for a higher class of plants that of the bone is far more efficient. Treat the bone sulphate with sulphuric acid to render it super-phosphate of lime, and it is a thousand fold ahead of plaster of Paris direct from the quarry.

#### “BLOOD OF THE ROCK.”

Here are ten pounds of bullock's blood diluted in one hundred gallons of water; and here are the same chemical ingredients in equal quantities alike treated—the potash from the sulphur, the potash from the felspar, the phosphate from the apatite rock, and other constituents from their primary sources; the chemical analysis is the same; but sprinkle a patch in your garden with the diluted blood of the bullock, and an equal patch right beside it with the manufactured “blood of the rock,” and mark again that the difference in effect is as great as in the other cases—your vegetables that drank what once life circled in the arteries of the animal,



are splendid while those of the other treatment are poor, half starved, shriveled up specimens on a par with a laborer who lives on hard-tack cakes buttered with olemargarine.

\* THE FOREST-HYPHEN.

As we read up the divine book of nature, we shall find that the central link or hyphen between the crude primaries and the higher and more beautiful forms of life, is the forest. Without this the processes of progress are interrupted. The forest makes the humus of the soil; mollifies, electrifies, and distributes the rainfall. The forest is nature's alembic, by which the very air we breathe is fitted to vitalize the blood and quicken the brain to balanced action. The forest is the heraldry of the Christ of good fruits.

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### **Forestry at the State Fair and Annual Meeting of the State Horticultural Society.**

At an interesting forestry meeting held at the state fair, September 8, 1892, able papers were read on the preservation of our native forests, from Prof. S. B. Green, Major W. A. Jones, of Engineers' Corps, U. S. Army, in charge of reservoirs at headquarters of the Mississippi river; Prof. B. F. Fernow, chief of forestry division, Washington, D. C.; Col. E. F. Ensign, Prof. George H. Parson, of Colorado Springs, Colorado; Hon. A. V. Clubbs, Pensacola, Florida, and others. Prof. W. W. Pendergast, Principal of the Agricultural School, talked in a conversational manner, practical at every point, on the educative influences of trees, their protection for the farm and home, their climatic and æsthetic uses.

H. C. Putnam, of Eau Claire, Wisconsin, one of the leading lumbermen of the Northwest, who is thoroughly posted in the forest situation of the country, showed that all that vast territory north of the Mesaba ridge, having northern drainage into the Rainy Lake waters, is practically used by the Canadians; that our government gets from the squatters and settlers only the legal fee, \$1.25 per acre, while the timber is all floated out of the country. He would have all that portion of the public domain withdrawn from settlement and rescued from trespass and fires. He also showed that the turning of the waters of the Bowstring this way by a canal is a practical undertaking, affording means by which to float the logs from the northern slope down into the Mississippi for the benefit of the United States people, and for better navigation of this continental river.

S. M. Owen, editor of "Farm, Stock and Home," compared forestry for agriculture to the human lungs as essential in fact to this industry as air and sunlight. He pictured the sorrowful condition of the Adirondacks, once so famous for water-falls and sylvan beauty, but now desolate on the mountains and valley—traceable to forest vandalism and fires. He showed that the decadence of agriculture always and everywhere keeps pace with the decadence of the forests. He urged unfaltering action to secure the proposed Forest Reserve on the public woodlands of our State.

The following petition was then read and signed generally by the enthusiastic listeners:

## PETITION FOR A FORESTRY RESERVE.

*To The Honorable Senators and Representatives of Congress:*

The undersigned citizens of Minnesota set forth that the annual fires on the woodlands of the public domain, have destroyed much valuable timber and largely injured the forest conditions necessary to economize our waters; that the stealage of timber has been immense; that the methods of cutting have been wasteful and ruinous to timber preservation and culture. We therefore respectfully urge the passage of a bill which shall ask for a practical system of forestry, managed by proper police forces to guard against fires and trespass, and develop forest growth. In accordance therewith, we respectfully urge that a reserve in one body, or in separate sections, be located on the public domain at the sources of the Mississippi, Red, St. Louis and St. Croix rivers, or other points, carved out of non-agricultural lands, aggregating not less than 2,000,000 acres, and so regulated as not to restrict the rights of bona-fide settlers, nor the rights of lumbering, mining and railroading, but rather to promote these industries without detriment to forest preservations.

## HORTICULTURAL ENDORSEMENT.

At the forestry session of the State Horticultural Society, held in the evening of the 13th of January, 1893, the above petition was unanimously endorsed by said society, to be incorporated in its annual report, and signed by the members. It now meets with general favor by all classes, lumbermen, with few exceptions, raising no objection to the undertaking on the provisions mentioned.

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### A Bird Gospel.

Oh, for a bird-gospel preached in all our pulpits, and taught in all our schools, and published in all our presses! There is no room for self-praise about our Christian or advanced civilization, so long as it is popular to recklessly destroy our forests and the song birds that people them and our meadows and grain fields and gardens. Prof. Samuel Aughey, who knows all about bird habits and bird needs, thus defends them:

"It is remarkable that in the last quarter of the nineteenth century there should be such large numbers in the most enlightened countries in which the savage spirit survives. For shooting wild birds, often maiming and crippling them, inflicting on them the acutest torture, is no less cruel and brutal than the cock fighting of Spain, and the bull and other animal contests of imperial Rome. In many respects it is much more cruel. Birds have a very highly organized nervous system and must be keenly susceptible to pain. Almost everything they do indicates this. Their quick movements, their marvelous aerial evolutions, their attachments, their maternal instincts, their evident enjoyment of the beautiful, and the wonderful powers of song that many possess, all attest their high physical organization and prove the greatness of the cruelty that would ruthlessly deprive them of life. The surprise is greater when we reflect that some men of education, and in other respects of high character, indulge in the so-called sport of shooting innocent birds. It may be sport, but is it not the sport of a barbarian and the enjoyment of a savage? No doubt future ages will look on the wanton killing of birds in this period with the same surprise and disgust that we feel on reading the stories of the animal contests in the Roman arena."

## Trees for the Farm and Home.

Extract from an address delivered by Col. John H. Stevens, now President of the State Agricultural Society and President of the State Forestry Association, delivered at the Farmers' Institute, Montevideo, 1888:

A prominent promologist in an eastern newspaper recently said: "We should plant trees, first for the ornamentation of the farm. I feel confident that I am addressing myself to an intelligent and appreciative class of men, who will be willing to admit this idea for its true value to them on their farms. You know that your farms are worth more for your efforts at improving and beautifying them not only for market, but also for your own personal use. You know that they will sell readier, and that they will bring you more money when sold for the beautiful trees that are planted upon them. You yourself would not take much money to have those trees removed that your own hands have planted and you have watched with care. In all our sterner thoughts of life we cannot afford to altogether ignore the beautiful in nature and the beautiful in art. To you "A thing of beauty is a joy forever" as well as to the rest of humanity who are even now panting for the beautiful. Again, "Life without beauty is a dead and unwholesome thing;" and again, "Trees are fit to minister to man's manly sense of beauty." These are the modern expressions of the deep and hidden sense of the beautiful lying under our sterner natures, and which are so successfully ministered to by the grand and majestic beauty of the living plant or tree. The man who could pitch the dwelling designed for the abode and resting place of his family in a drear and open field, treeless and flowerless, is a long way behind the æsthetics of the age, if he is content to leave it so. He has spent the foregoing part of his life for nothing, and has yet everything to learn respecting the beauty of this life. We know that men are alive to their best interests, and that they must and will plant trees around their farms and their homes for beauty and for use. Everywhere we see encouraging examples of movement in this direction, and much may they be extended."

### THE HOMES OF THE BIRDS.

Second—Trees are the homes and meeting places for the birds. Every farmer in our vast country will at once see and recognize the force of this proposition. Birds are the children of the air, and lodge among the branches of our trees. If there are no trees with their wealth of beautiful branches on our place, we can have no birds. If there are no birds there is no restraint upon the millions of devouring insects that are ever ready to prey upon the crops that the honest farmer needs for his bread and his money. So the relation between the tree-planting and the farmer's pocket is established, and is intimately close—closer, indeed, than some of us are aware of. Let us remember that most of the small and beautiful birds that warble among the branches of our trees are insect eating birds, and are our most intimate and devoted friends, ever working for our interests. Let us encourage them and their friendly efforts for our good in every possible way by planting trees for their convenience. The tree and the bird! How astonishingly beautiful these organized objects of kind nature are in their life and their work! Each of them are grand conceptions of Infinite wisdom, and are worthy of our attention and careful study that would fill volumes of scientific and useful teaching.



The tree and the bird? How intimately close is the relationship that exists between the departments of the natural world, between the vegetable and the animal kingdoms! Between the merest vegetable and the highly organized beauty of the air. This relationship is easily traced, the one ministering to the daily requirements of the other. Would we have birds to cheer and to bless us, let us plant liberally the trees they love.

#### FARM ECONOMY.

Third—The economics of the farm require trees planted. I am sure there is no farmer but will readily appreciate this statement and will immediately pluck up his ears at the mention of it. By the economics of the farm, however, I do not intend the discussion of the most advantageous ways of feeding stock or the best breeds of horses, cattle, sheep, &c., to keep for profit, but rather what are we going to do with those waste lands on our farms that are too wet and mucky to be used for the culture of grain, or that are too rough to admit the plough? These are questions of much importance to us, because every acre of our farms is liable for taxation; and consequently we of all men can ill afford to allow any of it to lie idle. We want it all to bring in something, and something that is useful to us. We advise you to plant the low mucky places with the American larch or with black ash, or with elm or willow; and besides turning a dismal swamp into a field of beauty it will soon be a source of great profit to its owner. The useless land of this country should be planted as early as possible, though in ever so rough a way, with young seedlings of oak, maple, or even a small quantity of the cottonwood, box elder, elm, white walnut or butternut. It would soon astonish the most incredulous to see the quantity and suddenness of the growth and profits arising from these discarded eyesores of the farm. Allow no stagnant miasma holes or useless eyesores on your place to destroy the symmetry and beauty of your lovely farms. Plant them with trees, so shall they be to you objects of pride and satisfaction and blessings to your country.

#### TREES FOR HEALTH.

Fourth—The healthfulness of the farm. At first sight you may perhaps think that now you have me. We say in all candor plant them on the farm and town lot for healthfulness. It is well known that trees in their growing action absorb in large quantities of gases from the earth and from the air. These gases for the most part are effete animal exhalations that have served a purpose, but are now given off from our bodies as useless, and worse than useless to us. These gases are the very life of the trees, and are absorbed by them in large quantities. Again, the trees give off gases that are useless to them, and these gases are the very food of our life. Only think of an arrangement like this in the infinitely wise economies of nature! The vegetable and the animal—the one mutually dependent upon the other, the lower form living for the higher, and neither of them living for itself. We have thought that a small but wild plantation of trees as a coppice on the lower end of each town and village lot would be the best advice that could be given by our boards of health. How much effete and decaying vegetable matter are recklessly thrown out in the back yards of all our town lots and left to decay and poison the atmosphere we are hourly breathing for our life?

Its deadly influences are sometimes felt by us and the dear ones of our family circle when attacked with the varied forms of acute inflammations or with typhoid fever, and the more dreadful diphtheria. A coppice of wild trees, interlaced with wild vines and creepers, just at the lower end of the lot, would be a calm retreat from the scorching heat, and a reservoir to utilize all the poisons and pestilences of the atmosphere. How simple the remedy, and yet we are paying the debt of our negligence of the species of nature. Blocks of trees and belts of trees on the farm would answer precisely the same purposes, and be an everlasting fund of satisfaction and pure enjoyment. Farmers, let us plant trees for healthfulness for ourselves and for our families. For what are all the wealth of your coffers of gold compared with the unspeakable blessings of health?

#### MODIFICATION OF TEMPERATURE.

Fifth—It is very generally admitted that trees have the power of absorbing and storing up latent heat, and again giving it out in times of extreme cold. If this is so, and we fully believe it is, how fine is the modifying influence that may be exerted on our climate in its depressing moods? Again, it is believed that the tree has the power of absorption of moisture, and in a time of severe drought again giving it out liberally through its trunk and its branches and leaves in the summer time. This influence ascribed to the tree has the effect of cooling and moistening our dry atmosphere during the heated term. This view presents the tree as an enormous laboratory, utilizing heat and dispensing coolness and moisture to correct the extremes of our seasons. By the simple means of their agency the extremes of temperature endured in every treeless region may be corrected. But further, we have sometimes thought, while sitting under our spreading trees, in the intense heat of summer, that there was always a cooling breeze there, and consequently that they were attractive to coolness and breeze. Have you not many times been struck with the same idea?

If we had the space at our command, we would like much to enlarge here on the subject of wind-breaks and storm-stayers, etc., in relation to trees. We are more than certain that the agency of trees is the most efficient and effectual wind-breakers that can be adopted. We are almost as certain that the same gentle influences may be credited with the cooling and refreshing moisture of many a summer shower that visits our plantations. When shall we arrive at a correct understanding of the great laws of nature, and the governing forces of the world? When shall we learn the proper relationship of one part to another in the arrangements of nature? How can we have the blessings of a fertile and fruitful country without the agency of trees?

#### DISTRIBUTION OF ELECTRICITY.

Sixth—The distribution of electric fluids in the air. The subject of electricity is a mysterious question that we cannot fully understand. Yet we know that the vast treeless plains of our continent are frequently visited with those destructive influences and the deadly lightning bolt. The great prairies of the West are annually visited by these alarming displays of nature to their serious loss and the discomfiture of the people. In tree-growing regions these displays are less frequent and less severe. Our advice, therefore, is to plant trees around your fields and around your dwellings to ward off the influence of destructive lightning.

## TREES FOR SHADE.

Seventh—Trees furnish a friendly shade and cooling breezes for the farmer's children and his cattle. As we have already anticipated this item to some extent, we will here simply say that for this use alone trees will pay far more than they cost. Is it nothing to you that your children have not the cooling shade of the spreading elm tree or the more emblematic maple, under whose spreading branches to enjoy their healthy sports at midday in the height of our heated season? Is it nothing to you that your cattle of pure blood, your horses of noble ancestry, and your sheep of finest clip are left out standing in the melting heat in a friendly fence corner, and without the grateful shade of one spreading branch over their defenceless heads? Oh, I know you count your interests better than this, and though you would not for your children, yet for your horses, cattle and sheep you will provide the grateful shade that blesses them in the burning noonday. Plant trees.

## TREES FOR TIMBER.

Eighth—Trees supply timber, poles, and brush for the use of the farm, Oh! you say this is a glaring statement. It will take years upon years after I am old to grow timber, &c., for the uses of the farm from these trees, and we will never see any benefit from the trees we plant! We know from our own experience that trees planted on good soil and doing well for ten years will come into considerable usefulness, especially for poles and brush for the farm. In passing through the southern part of this county last fall with Hon. Mr. Shannon, of Granite Falls, we were amazed at the size and beauty of their fine trees planted on the roadside and in the field. These trees, mostly our cottonwood, maple, elm, box elder, and sugar maples, could not have been planted many years, and yet they were large, fine spreading, handsome trees, and an ornament to any country. Be not, therefore, so easily discouraged. Kind nature is generous of any assistance given her, and what can be done in this county can also be done in any county in the State. Plant trees therefore, as nature can do nothing for the man who will not help himself. If you help her she will reward you with the proudest and most satisfactory results to crown your feeble efforts. Try it!

## TREES AND PRECIPITATION.

Ninth. Trees are an encouragement to rainfall and water supply. This is now become a settled principle in the creed of understanding tree planters, and our observation teaches us that it is correct.

Trees by means of their influence on the atmosphere increase the amount of condensation of moisture and precipitation. Again, by means of their roots and their action on the soil they check the force and injury of torrents, and by rendering the ground porous and open largely drink it in, to be given out again when and where most needed. But again, forests, by means of their abundant foliage, evaporate or throw off enormous quantities of moisture into the air, and this, after being carried about by the winds, is condensed by the coolness of evening, and falls plentifully upon the neighboring country in the form of pearly dew. So the action of the trees and the reaction of the atmosphere is constantly going on, and every time man receives blessings by the mysterious arrangement. Plant trees for moisture.



## GENERAL BENEFITS.

Tenth, and lastly. By planting trees for ornamentation and shade we shall have more fruit and better fruit, better crops of grain and grass, and better horses and cattle, and more pleasure and purer enjoyments in life. We need trees around our orchards to give out warming and tempering influences in the spring time when the trees are covered with tender blossoms and the air is loaded with pinching cold. We need the presence of trees around our fields and our homes in summer to condense the cooling vapors and to invite the pleasant zephyrs to fan our parched brows. More especially we need the presence of trees in our winters to offer a calm resistance to the raging blast and to shelter the tender buds of our fruit trees from the withering cold and killing frost. We need their grateful presence around the home of our loved ones, for their presence is cheering to our eyesight, and it is a relief to look upon them while nothing but whiteness is all around.

Let us each in our humble way strive to add our humble mite to the sum total of our engagements of this humble life below by planting a few trees to live and testify of us after our heads are laid low and our hands are still in everlasting rest.

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### State Bounty for Tree Planting.

A new antagonism is springing up against forestry, based on the theory that "it is inconsistent to pay a man for improving his premises with trees; that there is no more reason for this than to pay a man for subduing the sod on his farm and raising a crop on it." This argument, if such it may be called, is irrefutable if trees sustain no broader relation to the public interest than plowing a piece of land or raising a crop of wheat. The State educates the children. Is it inconsistent on the part of the State to pay for such improvement of the family or families? In one sense the children are or will be public property. They are candidates for citizenship; hence the necessity of universal education at the expense of all the people. Though the parent owns the child, yet the State owns the child's example, the child's character, evolving into citizenship. Though the bounty trees belong to the man who plants them, though he is specially benefited as he ought to be, yet the effects of the trees, being unlimited, are State-wide, country-wide. They are factors in mitigating the rigors of our hot and cold winds: they protect the people's crops near and afar; they continue the wood industries; they economize the water; they beautify the landscape; they deepen and enlarge the sentiment of patriotism; they lift the masses out of groveling notions to a worshipful love of "the good, the beautiful and the true." Hence, the State can afford and should encourage tree planting and culture by rewards. It is not wholly an appeal to selfishness; it is rather a means to the ends of general prosperity and progress.

#### ABUSE OF THE STATE'S MUNIFICENCE.

The only just cause for repeal is the abuse of the State's munificence. Were such abuse the rule, the bounty act should be expunged from the statute. Do what the State may, it cannot wholly prevent individual criminality on the lines of humane conduct. It is enough to know that,

under the bounty act, the southern portion of the State has been forested to a large extent. Since that enactment not less than 50,000 acres of prairie lands have been successfully planted with trees. Three hundred thousand dollars, paid by the State for this purpose, are returned to the State in greatly enhanced values. But not half of the prairie lands are yet properly forested; hence the retention of the bounty act is our necessity. It was noble in those senators who parried off the blows of the men who sought to kill the law that has enabled struggling farmers to raise trees as a personal and public benefaction.

#### RESPONSIBILITY OF THE FORESTRY ASSOCIATION.

Limited as the means to do are, the Forestry Association must stand as guard over the application of the Tree Bounty Act. The State offers \$2.00 per acre for a term of six years succeeding the first year. This investment is a claim upon such trees. The State must have the trees in return for the common welfare. There must be positive evidences of value received for value tendered. It is not enough to plant the trees; they must be cared for and healthfully alive when the bounty is demanded. The Association feels a responsibility in this matter, and proposes to institute strict investigation wherever needed, and it will be sure to report any and every abuse of the State's generosity. It is not our business as an association, to serve as a forest police, but it is our business to see that tree planting and tree conservation are real things, living things, growing things. With this attainment the duty of the Forestry Association is discharged.

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### Voices From the Woodlands.

"The Voice of one crying in the wilderness."

I write this while in the woodlands of the North, in quest of wood material for the World's Fair. The region of cut pines extends for hundreds of miles in all directions. Like an eating cancer, the ruin wrought has deadened everything touched by ax and fire. Black stumps are left, but seldom shadowed by live trees, generally the short lived poplars occupy such ground. New trees would have sprung out and densely reclothed these lands had fires been excluded. Nature here has retrograded. The very ammonia in the soil has been burned out. Its nutrition is seriously harmed. What makes the forest real, is gone. The forest roof is broken down. The forest floor is broken up. This characterizes almost the entire woodland condition. Hence, a rapid destruction to water conservation, and the lakes and rivers in these woods are meeting the fate of the departing pines. The hardwoods, too, are doomed. Everything in the shape of a tree or a hoop pole, that can be converted into money, even if the business don't pay over fifty cents net per day, has to come down. A combustible stuff is left in the woods which the annual fire laps up, and the conflagration spreads and spreads, killing everything in its advance, leaving but here and there a green oasis in the general wreck.

This country is naturally adapted to growing the pines and valuable hardwoods; will pay larger in tree crops than in agricultural productions; and, at the same time, such woods, rightly managed, will surely preserve

these head waters and thence our rivers from drying up. Common sense economy suggests that we rescue them from further vandalism. But an ugly opposition pits itself upon such an effort. Certain business men of the trust nomenclature discover that lumber profit on a vast scale is fast approaching an end, and they rush and scramble for the yet unraided pineries before less scrupulous parties from the Dominion of Canada can steal them, or greater fires devour them. Many of the owners of the timberlands are non-residents, living in the great eastern cities, and occupy the same relation to this region that the landlords of Ireland, while rioting with "wine and women" in the cities of London and Paris, do to their tenant farms.

There is another factor in the ruin going on, not so culpable in intent, which must be calculated before the forest problem can be solved. Most of the farmers who have entered claims in these woods, came here poor and remain poor. The trees have been their living. Crop raising has not paid of late years under the piratical monopoly of the markets. They have therefore neglected their farms for lumbering business on a small individualistic scale, and not a few trespass upon the territory of the absent landlords. We have, then, two classes of lumbermen—the syndicates who have capital to absorb the best and get the most, and the "poorer fry," derisively so called by their lords, who content themselves with taking what escapes the first axes and the last fires. Looking the situation all over, woeful is the aspect, foreboding terrible disaster to our business interests, not only in the lumber line but especially in agriculture that depends directly upon forests to break and soften the wind and frost and furnish water for crops.

#### THINNING OUT.

There is such a lack of good common sense in the management of utilizing these valuable woodlands! No attention is paid to economic methods of thinning out. Nowhere do the owners seem to think that trees in a compact body mutually protect each other against the death-dealing blows of excessive heat and cold in our climate, and that where they make great and sudden gaps among them, they are wrecking the remainder of their forests. Not over a third at the utmost of the trees should be cut at a time, and that too with wise management, that the law of mutual protection shall hold intact.

#### WIND BREAKS.

Minnesota has its "big woods" its pine lands, its "park region" (a beautiful collection of lakes, groves and prairie), but the greater part of its rich agricultural lands are prairie lands. A prairie of rich soil with water in streams or from inexpensive wells, but with a sweep of winds from the south in winter, that call loudly for "protection" not found in politics but in trees. These winds have been the wings of the autumn fires. They are not needed now. Many a prairie farmer has wished that those wings were clipped! An old man, a changing resident of many estates, a typical New Englander, one of Dr. Holland's "God's nervous unrest," once said: "Tell me where the cuss hain't lit and I want ter go!" This quaint remark is a true way of saying that the best lands have their demerits. The greatest enemy upon our prairies is the wind. Note the evils entailed:



1. They increase drouth by licking up the moisture.
2. They prevent fertilization of plants by blowing away the pollen. This is the main reason why our prairie corn fails so frequently to fill out at the tip.
3. The fine tilth of soil when bare of growing crop is blown away. This is a very severe loss.
4. Stacks are untopped, shocks thrown down, and men and team waste their strength in the field fighting the winds. Every prairie farmer will recognize experience in these statements.
5. In winter, cold is intensified and snow blown from where it is needed to where not wanted.—Farmer's Institute.

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### The Native White Pine.

Undoubtedly the most majestic and picturesque tree of northern forests is the familiar white pine, and no other is so valuable in the common arts of life. As an ornamental tree the white pine deservedly stands high; for while it is a strong grower, its long and flexible leaves relieve it from that feeling of harshness which attaches to the Austrian and Scotch species. And its very familiarity is a strong point in its favor, for it strengthens the ties of old association, and carries our thoughts into our own woods and over our own hillsides. It takes kindly to cultivation, too, demanding only a dry and rather loose soil, and no extra attention. It is too coarse for the immediate vicinity of the house, yet it can come closer than the other large pines. The long, slim cones of this pine distinguish it from all its congeners in the East, and they have about them more grace of form than any other pine-cones which come within the possibilities of our gardens.

But the white pine is most characteristically a part of our landscape when it stands alone in some field or on some declivity, shorn of some of its limbs, and bravely struggling against the inevitable march of time. We appeal to our readers to spare these isolated sentinels; and we hope they will not forget to give the younger brood a place about the home.—*American Gardening*.

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### Petition for a Forest Reserve.

*To the Honorable Senators and Representatives of Congress:*

The undersigned citizens of Minnesota set forth that the annual fires on the woodlands of the public domain, have destroyed much valuable timber and largely injured the forest conditions necessary to economize our waters; that the stealing of timber has been immense; that the methods of cutting have been wasteful and ruinous to timber preservation and culture: We therefore respectfully urge the passage of a bill which shall ask for a practical system of forestry, managed by proper police forces to guard against fires and trespass and develop forest growth. In accord therewith, we respectfully urge that a reserve in one body, or in separate sections, be located on the public domain at the sources of the Mississippi, Red, St. Louis and St. Croix rivers, or other points, carved out of non-agricultural lands, aggregating not less than 2,000,000 acres, and so regulated as not to restrict the rights of bona fide settlers, nor the rights of lumbering, mining and railroading, but rather to promote those industries without detriment to forest preservation.

## Climatic Sanitation.

By the agency of trees we have more equability of climate, which can be obtained by no other way. They keep the ground healthfully cool in mid-summer by obstructing the heat rays; by their millions upon millions of leaves they filter and vitalize moistures and exhale it upon the air properly prepared for us to breathe; by their roots they take up for growth vast amounts of stagnant water which otherwise would breed pestilences; by nitrificative processes they aid in the introduction of oxygen into the soil for healthful aeration to plant and animal life; by evaporation they produce a salubriously cool and moist atmosphere, forestalling chills incident to rapid radiation of heat.

Biederman's *Geniralblatt*, a German review, affirms that "wooded districts are not troubled with smoke, injurious vapors, or germs and bacteria that are found in towns. The innumerable leaves and branches of a forest in a manner filter the air, and retain the micro-organisms which float in the lower grounds, besides woods cut the cold and dry winds so dangerous to the organs of respiration and render the temperature more uniform." By scientific experiments on heat radiation, Prof. Tyndall demonstrated that were it not for an invisible gaseous envelopment with its moisture surrounding the earth, largely evolved by forests, "it would long ago have radiated its heat to an extent totally destructive to every living organism."

### THE CIRCULATORY SYSTEM.

What the lungs are to the body, the forests are to the country we live in. Dating our rainfall at the highest, averaging 28 inches, six inches at least is wasted in destructive floods. In round numbers this would amount to 100,000,000 gallons per square mile of surface lost to food plants, lost to the people of the towns and cities whose water necessities are constantly augmenting. The forested ground covered with leaves does not freeze as readily nor so deep as those of the treeless prairie. Hence, ordinarily, more water can be absorbed and retained in the forests. In the open country snow melts before the ground is thawed out, and that, too, at a season when the atmosphere is considerably saturated with moisture, preventing evaporation to an extent. Then we have our usual spring waste of water, and in summer, when the ground is baked hard, a large per cent of heavy showers run off from our fields and gardens. During the late fall, winter and early spring months, including that of heavy showers in the heated season, water enough is wasted, which, if properly economized, would feed all our plants for healthy growth, and our streams and wells. If we would have paying crops and plenty of water to drink and utilize for mechanical industries, we must copy nature's method, plant wide, dense belts of trees around the slopes and edges of all our hills, our lakes, our rivers, our gullies and sloughs, and build dams where feasible, and dig underground reservoirs where these facilities are wanting, thus saving what runs off to irrigate our fields.

### UNSANITARY DREGS.

But there is a sanitary virtue here involved of immeasurable worth. The sands and pebbles purify our surface waters where they flow, more especially if large in amount. Forests constitute the circulatory system. They drain stagnant water and send it back into the air to fall in show-

ers. Their great roots penetrate into the retentive clays, opening channels into veins and cavities, where the water is sipped up by capillation, thus draining large areas of surrounding soil and husbanding it for economic use. Thus the death rate is greatly lessened in the towns and cities. Physicians tell us more than 80 per cent of the typhoid cases are produced by drinking impure water. Sickneses keep pace with the ruin of our forests and loss of our flowing waters. As they become more stagnant in the river troughs, so must we drink of unsanitary dregs. What is the sequence? Poor crops and general ill-health.

### Colored Light on Vegetation.

It has been discovered by the spectroscope, that light, when traversing a leaf, shows an abundance of green and red rays, which are not utilized by the plant. This, doubtless, accounts for the fact that young trees will not spring up in the dense shade of the parent tree. Trees differ, too, in the quality of the light that is absorbed and transmitted. Doubtless the mosses and liverworts enjoy the red rays, for they will thrive luxuriantly under the densest forest shade. Some of our forest trees, the ash for instance, will live under the shade of other trees, where a different species will die. Some of the rays transmitted, for instance, by the box elder, whose shade predominates, may be absorbed by the ash. A beech will grow under the shade of an oak better than the young oak itself. In such cases different species of trees mutually support each other. It has been observed that the box elder does less injury to grass and grain under its shade than some other species. The elder seems to favor the growth of grass, while the broad-spreading butternut excels most trees as a monopolist; it injures both grain and grass.

#### EFFECT OF SHADOWS.

The effect of the shadows of different species of trees elongated, for instance, in the morning sun, is very marked. Though the shadows may be equally dense, the injury on cultivated plants is very unlike. Whether there is any peculiar chemical action, imparted by the tree, cast forward into and with the shadow, we know not; the more plausible inference is, on the data here given, that certain rays are absorbed more by the leaves of one tree than another.

#### VARIETY NECESSARY.

These experimentations corroborate our observations, demonstrating that trees do better where a variety of species are growing side by side, than they do under our set methods having only one species or variety on the lot. We should ever consider quantities and qualities of foliage when planting in growing windbreaks and forests. This rule holds good in our fruit orchards and floral gardens. We shall thus have luck in making trees live healthfully, better crops and more beauty of leaf structure and color on the lawn and landscape.

Experience the world over has demonstrated that the interests of the people at large are never safe when they relinquish to private ownership and management of all the native forests. The streams, lakes and rivers are directly allied with all our industries. We cannot guard them with too jealous care. For their economic preservation and distribution, for great windbreaks to shelter our crops, our stock and our homes, the people as a whole must retain certain forest possessions, specially blessing the homesteaders.



## Healthfulness of Trees.

In the beautiful process by which the hydrogen of water is wrested from the embrace of oxygen, "sending it kiting into the atmosphere for a new flirtation and inviting the carbon into the nuptial bower," if the acid of the carbon, through which develops the carbo-hydrates, is not sufficiently refined and vitalized in the laboratories of decay and thence of advanced animal and vegetable life, the water and ammonia supplied are so many dead weights hanging upon the plant. No chemical translocation then occurs to any healthful extent, and the plant starves amid apparent luxuries. Trees, more especially their lung leaves, serve as alembics through which such acids are distilled, fitting them for the growth of food plants and healthful conditions of atmosphere. The chemical transformation, under the electric force of sun rays, "that organize the carbo-hydrates by the meeting of carbon dioxide and water in the chlorophyll of the leaves and other growing tissues, is an atmospheric purifier," and, therefore, an antidote to germ diseases. In this "chemistry of nature" trees are more potent agents of health than other vegetations, so demonstrated by experimentation. That atmosphere, then, is not best fitted for blood vitalization where forests are wanting. The sudden reaction of high, hot winds into low, cold winds—always occurring on treeless plains—have the same effect upon us as upon our food plants. These atmospheric perils can never be forestalled, or be greatly mitigated, except by the intervention of dense forests and the chemical changes here defined.

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## Street Trees Poisoned.

Any one taking careful observation will notice that quite a percentage of the street trees in the Twin Cities, of comparatively immature age, as well as elsewhere over the country where dense populations center, is in a dead or dying condition. In Cleveland the losses are serious. So alarming are the losses in some of the great cities of the old world special methods are used to determine the connection between cause and effect, and the establishment of remedial legislation. These misfortunes are increasing. Some varieties, under the same conditions, survive better than others. The conifers suffer considerably.

Among the causes are, no doubt, our stone and cemented pavements and rapid drainage, which impede the aeration of the roots and largely reduce the necessary moisture supplies. There are other direct injuries which reduce vigor and vitality. Leaks from gas pipes saturate and poison the soil near the roots, the same as they do the air we breathe. The sulphuric acid accompanying the burning of soft coal or rock oil also poisons the trees. It is found to injure plants if the air contains but one part of this gas in 50,000.

Prof. J. C. Arthur, of Purdue University, Indiana, says: "More recent experiments by Schroeder (Bot. Centralb., 1883, p. 368) make it certain that even one part in a million is harmful. \* \* \* \* \* From the well known abundance of sulphur in American soft coal and crude petroleum, there can be no reasonable doubt that it occurs in sufficient amount to largely or wholly account for the destruction of the trees."

Scientific experimentation demonstrates that a potent cause of the destruction of our street trees is to be found in the smoke from the large manufacturing establishments, especially from the oil factories. "The action of the smoke," says Prof. Arthur, "is two-fold—mechanical and chemical. The mechanical action consists in excluding the light from the green cells of the leaf, and thereby preventing the formation of organic matter for the nutrition of the plant. In proportion as the light is excluded the plant languishes. The clouds of smoke that float above the tree temporarily cut off part of the light, and the coating of soot over the surface of the leaf acts continuously. Dust has a similar action, but is a less powerful absorbent of light, and is consequently less injurious. Rough leaved trees suffer most, as the soot and dust are less readily removed by wind and rain."

Prof. B. F. Fernow, chief of the forestry division at Washington, says: "The gases, which penetrate the leaves, not through the stomata, but by osmosis over the entire surface, act injuriously, directly by poisoning and indirectly by destroying the balance between water supply and transpiration, the sulphurous acid desiccating and destroying the tissues of the leaf."

As long then, as the smoke nuisance continues we cannot reasonably look for any practical remedy—our trees will die under long continued coal and oil smoke. How to prevent the escape of the noxious gases should engage the careful attention of our city authorities and boards of health. Protection to human life is here involved. High chimneys do not prove to be altogether effective. Smoke washing by the use of the milk of lime has proved practical in England. It is a very simple and inexpensive method, "nothing but a series of U shaped flumes through which the smoke is made to pass under a sprinkle of water." Other devices, it is hoped, will yet be invented that will be more effective in neutralizing the action of the poisonous gases, for safeguards in our cities to vegetable, animal and human life.

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### Is it a "Mere Sentiment?"

Speaking of the forests of California, in the *Monthly Californian*, Abbot Kinney says:

"Every true man loves the forest. The gnarled oak, the stiff, slim pine and colossal sequoia, each has for the forester a story, a character and a confidence. The leafy shades and the bosky dell have their delights of silence and solitude. On the upland ridge the breezes clash the needles of the tall old pines high in the air. To the lover listening below it is a sweet song of sorrow, borne to him on a fragrant breeze."

This beautiful allusion to the æsthetic of the forest is followed by a graphic picture of the destruction of the native forests of California.

He gives a sad refrain respecting the disappearance of the gigantic sequoia, "those magnificent monarchs of the forest." What destroys them? The lumber syndicates there. As one by one they fall before the relentless ax, the groan they give is felt by every lover of trees in the enlightened world. In vain we plead, "Woodman, spare that tree!" Abbot Kinney but repeats the story we of the East are telling the people,

and in California as here; the protests against forest vandalism are laughed at and scorned as "impractical," "fanatic," "cranky." All round it is a fight to save our valuable timber trees from utter extinction.

Are we impractical because we sometimes cite to and emphasize the worshipful feeling every true soul cherishes for the protecting trees? Call it "sentiment," if you please, yet it is the mighty force at work to rescue our agricultural, lumber and other correlative industries from a terrible collapse. Blot out the pines, the oaks, the maples and other valuable trees, as men recklessly are doing, or rather prevent their replenishment by young growth, and our business interests fall with them with the certainty that the heart ceases to beat when the dagger pierces it. Our primal object is not to preserve natural scenery, to create parks for recreation and hunting grounds. We offer substantial, economic reasons for forest conservation, knowing the scenic and romantic will next follow and complete our forest devotions. Without forests, we sink back into barbarism; with forests, and their industries evolved, we follow on the advance lines of civilization.

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We need a careful classification of public lands under two heads: Lands fit for agriculture, which alone ought to be open for settlement, and lands unfit for agriculture, which ought to be carefully closed against settlement, and kept in forest.      \*      \*      \*      \*

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"It is the purpose of forestry to point out to the lumberman the true method of exercising his own profession, which will provide him material for the future as well as for the present, by maintaining permanent forests through a succession of crops."

















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